To

Four young Nature-lovers

Eileen, Dick, John and Stella

This Book is affectionately dedicated

By their Father

# Nature Photography

## BOOKS BY OLIVER G PIKE



In Birdland with Field glass and Camera
Woodland Field and Shore
Hillside Rock and Dale
Home life in Birdland
Adventures in Birdland
Birdland Pictures
Behind the Veil in Birdland
Through Birdland Byways
Farther afield in Birdland
Wild Nature Wooed and Won
Bird Biographies
The Scout s Book of Birds
More Stories from Birdland
Birdland s Little People
Picture Stories from Birdland
Birdland Stories
The Great Winding Road
Birdland
The Birds of Ayrshire
Rambles in Britain s Birdland



Nightingale

# Nature Photography

by OLIVER G. PIKE, FZS, FRPS, MBOU
*Illustrated with Photographs taken from Nature by the Author.* ❖ With Chapters on Big-game Photography by MAJOR RADCLYFFE DUGMORE, FRGS, Marine Photography and Low-power Microscopy by F. MARTIN-DUNCAN, FRMS, FRPS, FZS, Photography of Plant Life by E. J. BEDFORD, FRPS *Illustrated by the Authors.*



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# Preface

DURING the past few years Nature Photography has made very great strides; there are hundreds of photographers anxious to take up this fascinating branch, and I have received a very great number of applications for advice on the subject. In the following pages I have attempted to give the methods adopted by myself in a lifetime spent among our British birds and mammals, which are illustrated with my camera; in addition I have included many anecdotes relating to the actual photography, which show where success was assured, and also instances where failures resulted. These experiences should assist the beginner, and also arouse his enthusiasm, for there is no doubt that Nature Photography is one of the most fascinating of all outdoor hobbies. Some have called it a sport, and when the reader has perused the several chapters on many branches of this work, he can judge for himself as to whether this is a correct term to bestow upon the days he spends in the fields, in tracking down the wild creatures with his camera.

It has been my aim to assist those workers in all branches of Nature Photography, and for that reason I called upon three friends who were pioneers in their respective work to supply chapters to make this book as complete as possible. Major Radclyffe Dugmore, F.R.G.S., the author of "The Wonderland of Big Game," and many other books on big-game hunting

with a camera, writes the chapter on "Big Game Photography" F Martin-Duncan, F R M S, F R P S, F Z S, is responsible for two chapters on "The Photography of Marine Life" and "Low Power Microscopy," while E J Bedford, F R P S, supplies a chapter on "The Photography of Plant Life" These authors have illustrated their chapters with examples of their work, and I take this opportunity of thanking them for their valuable assistance

In the various chapters we have endeavoured to give advice as to the best apparatus to use, and the way to use it, but it is possible that the beginner may be confronted with other problems, in such instances I shall always be pleased to give advice to correspondents who enclose a stamped and addressed envelope

O G P

The Bungalow
Leighton Buzzard

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A Ja kdaw alight ng

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## CHAPTER I

# Nature Photography

## ITS GROWTH, INTEREST AND USE

JUST forty years ago a small boy about to enter his 'teens purchased a camera. This wonderful instrument cost three shillings and sixpence. To him this was a fabulous sum, but included in the outfit was a camera that really took photographs, plates, papers, chemicals and a tripod. The youth, who always liked value for his money, however, was not satisfied, and wrote a furious letter to the makers because the tripod wobbled! With this camera he photographed a vase of flowers and other similar subjects. A year later he became the owner of a better camera, and with this began to photograph nests of our British birds. At the same time two other men, R. B. Lodge and Cherry Kearton, were working on the same lines, and for a time those and the author were unaware of the activities of the others. These three pioneers of nature photography little thought at the time what strides their hobby would take. Now their disciples may be numbered in thousands, and there are few countries in the world without their workers.

The wonderful collection of nature photographs to be seen each autumn at the annual exhibition of the Royal

Photographic Society in Russell Square, London, shows to what a pitch of perfection nature photography has reached Those early workers never dreamt of such results being obtained The high-speed work with exposures as low as 1/5000 second, have captured wonderful actions of bird, beast and insect The chameleon's tongue which flashes out with such rapidity, has been caught in the act of snapping up the unwary fly, bees and other insects which vibrate their wings during flight with amazing speed have been captured with the camera, with such fidelity that the markings on their wings are seen clearly in the finished print

The cuckoo, around whose habits such a storm of controversy has raged, had her secret of the manner in which she deposited her egg stolen from her by the camera, without the photographic records of the actual laying the mystery could not have been proved, but the camera has shown us how she comes to the nest, first steals one of the original eggs, then, holding this in her beak, moves her body on to the nest, lays her own egg in the place of the stolen one, flies off with the latter, and devours it

The wild animals of the African jungle have had their home life shown to hundreds of thousands of interested people, the marvellous bird life of the Antarctic regions has been shown to crowded audiences in all parts of the world, whereas, without the camera, those frozen regions would still be holding their secrets, except to the very few who were privileged to look upon them

These beautiful cinema films show us scenes that can only be looked upon by the experienced naturalist after weeks of preparation and toil, cycles of life that take three years to complete are shown in a few minutes, and



Nest of Whinchat



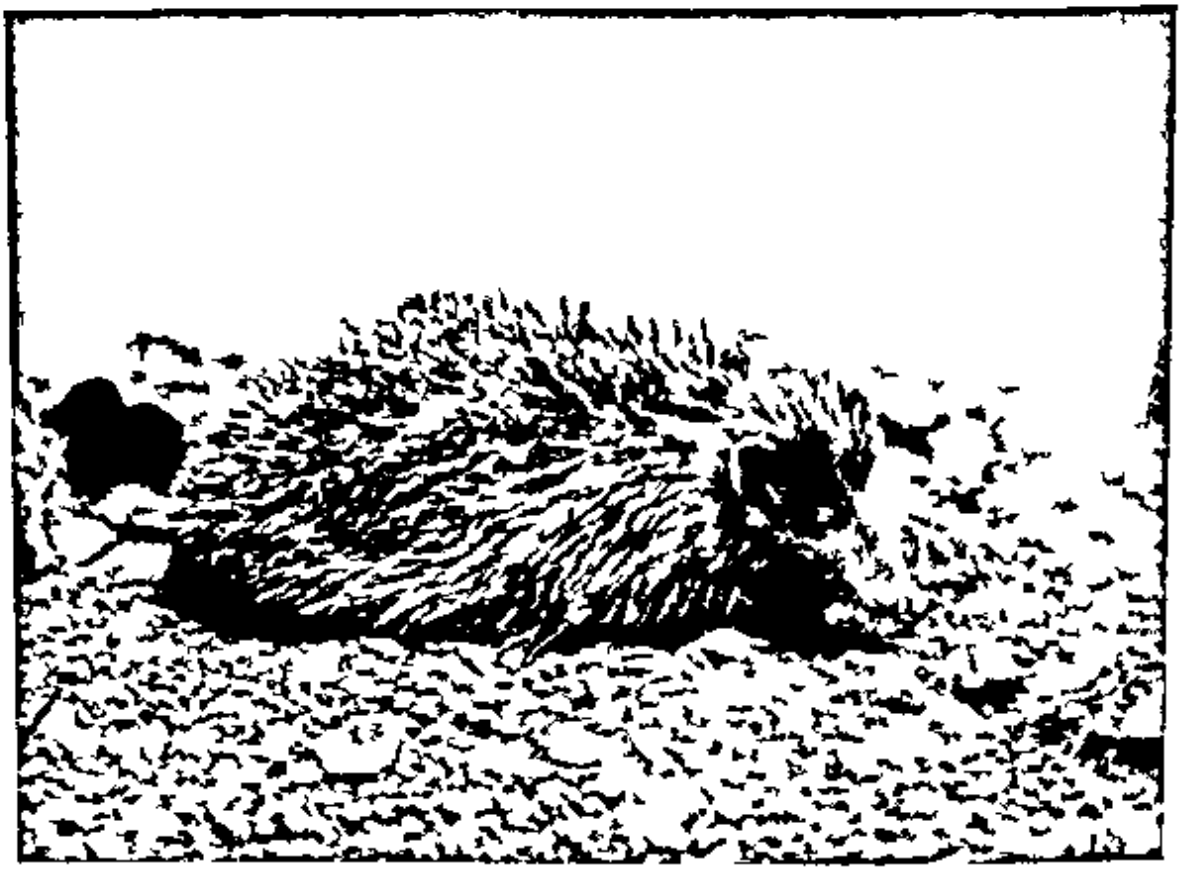
Eggs of Norfolk Plover
*Inset*, Norfolk Plover sitting

[*Facing page* 2.

even plants and flowers have revealed their secrets to us. Nature photography is able to show us the germination of a seed, the manner in which the tiny grain opens, then forces the soil aside to spring up as a strong plant, and the development of the leaves and bud, the fertilisation of the flower, and eventually the ripening of the fruit and the death of the parent that bore it. All fascinating in the extreme, and the camera of the nature photographer has made it possible for us to view these things from our easy chair.

The secrets of the ocean floor, the mysteries that lie hidden under the waters of the slowly flowing river have all been revealed to us; the infinitely small, magnified with the microscope and again photographed, has shown us what wonders remain hidden from our eyes. Again, high-speed cinematography has shown us the most rapid actions slowed down which has enabled us to see the exact manner in which a bird uses its wings. What artist, before the advent of cinematography, ever pictured a bird commencing its flight with the wings working in a circle, that is, on the downward movement the wings are brought in front of the beak, then pushed backwards to assist the bird to rise and also to force it forward? Yet ultra-rapid cinematography has very clearly pictured this action. The human eye failed to show us how birds balanced their bodies on landing, high-speed photography has obtained this secret, and my "slow-motion" photographs of gannets, kittiwakes and other large birds landing, show how the wings are moved quickly up and down three times to assist in balancing the body. Other secrets of flight have been revealed to us; in fact, the possibilities of the camera in the hands of the experienced nature photo-

grapher are endless, a world of wonders has been opened up for us to feast our eyes upon, therefore it is little wonder that, in a few years, the band of these enthusiastic workers has grown from less than half a dozen to thousands



Hed$_e$ehog

## CHAPTER II

# The Nature Photographer

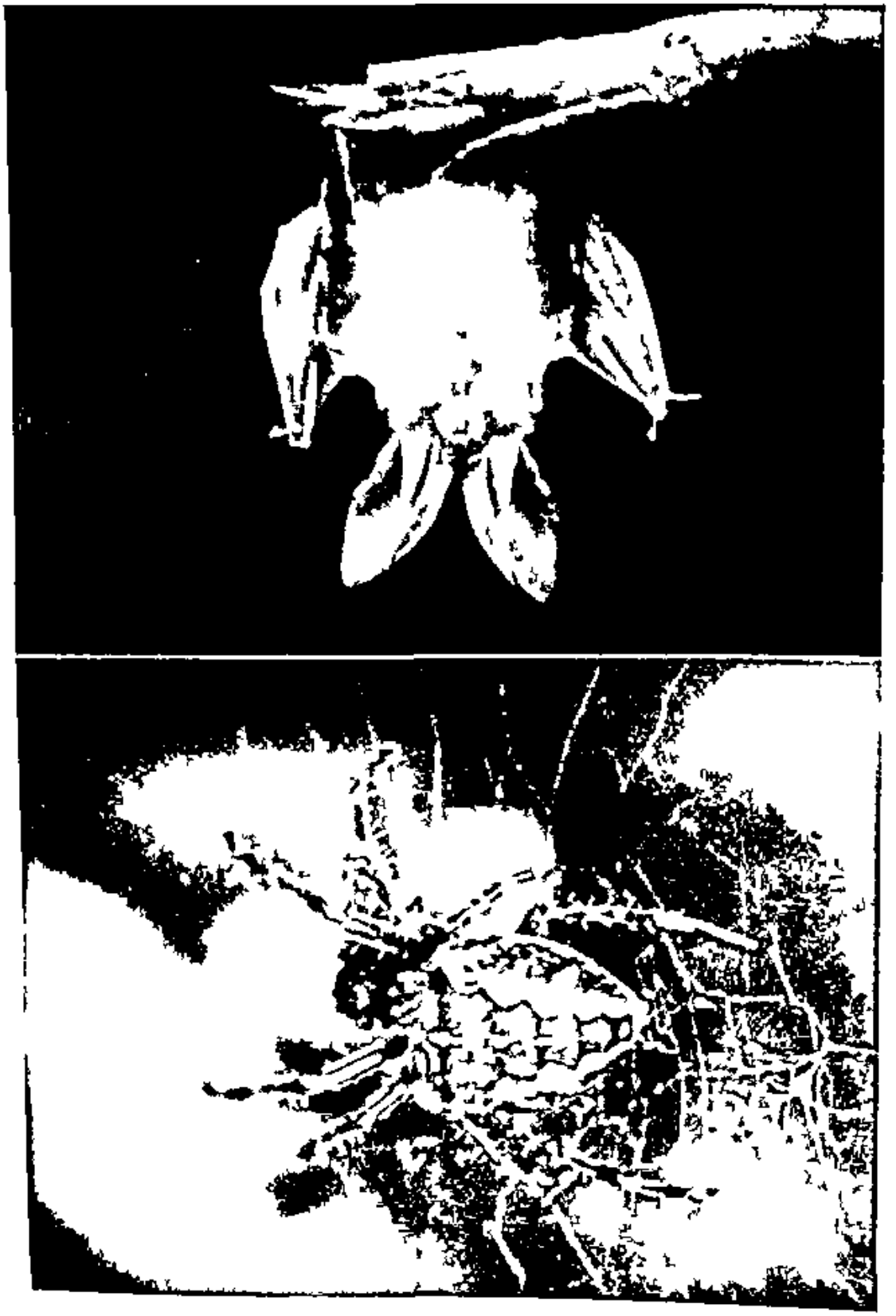
MANY people take up photography intending to specialise in landscape, architecture, or portraiture, then, when they come up against the difficulties, give up their fine ideals and revert back to mere "button-pushers," leaving the flourishing trade to finish their work. But in an experience going back many years, I have found that if a nature lover once takes to nature photography he never gives it up. He may have slack periods, but as surely as the spring returns with its call from the wilds, so just as surely must he once again get to work with his camera to make records of his elusive subjects.

Perhaps it is the difficulties of the work that appeal to our sporting instincts. There is always something very fascinating in knowing that you have successfully outwitted a clever creature, and that is what nature photography really means when we attempt to photograph our wild birds and mammals. I have had experience of many and varied forms of sport, racing in several forms, shooting with rifle and shot-gun, flying, motoring and nature photography. If I had to decide which had given the most satisfaction I would unhesitatingly say the latter. Nature photography really is a sport, for it is a question of pitting your wits and cunning against that of the wild

creatures, knowing all the time that the better one will win. If you happen to be the successful one, and you return with lasting records on your plates or films, I can assure my readers that the satisfaction is far, far greater than returning with a number of dead bodies after a day with the gun.

If we could obtain a record of the time spent in obtaining their pictures by the many photographers exhibiting in the natural history section of a large photographic exhibition, the result would be very staggering. All the hardships encountered, the hundreds of miles of travelling and the disappointments before the successful results were obtained, would make interesting reading. But there is an enormous amount of satisfaction when you see the picture you have striven for actually on the walls.

The majority of people looking at such pictures might pity the photographers who had to spend hundreds of *hours in waiting and watching for their wild sitters.* As a matter of fact, no sympathy need be wasted, for the nature photographer usually has quite a good time when waiting several hours for a bird or mammal to come into line with the camera. There is often something of interest going on around, in addition to the creature you are expecting. There are exceptions, as I know to my cost, for I have spent many weary hours in hides on the Scottish moors and mountains. On one occasion the loneliness and silence was so great that one felt alone in the world, and the note of a bird, or the cry of a mammal would have been more than welcome. On the other hand, there have been occasions when many would willingly have changed places with me, and one such instance occurred last spring. I was sitting in my hide



*Top* Long eared Bat re t ng
*Bot om* Garden Sp der

[*Fac ng page* 6

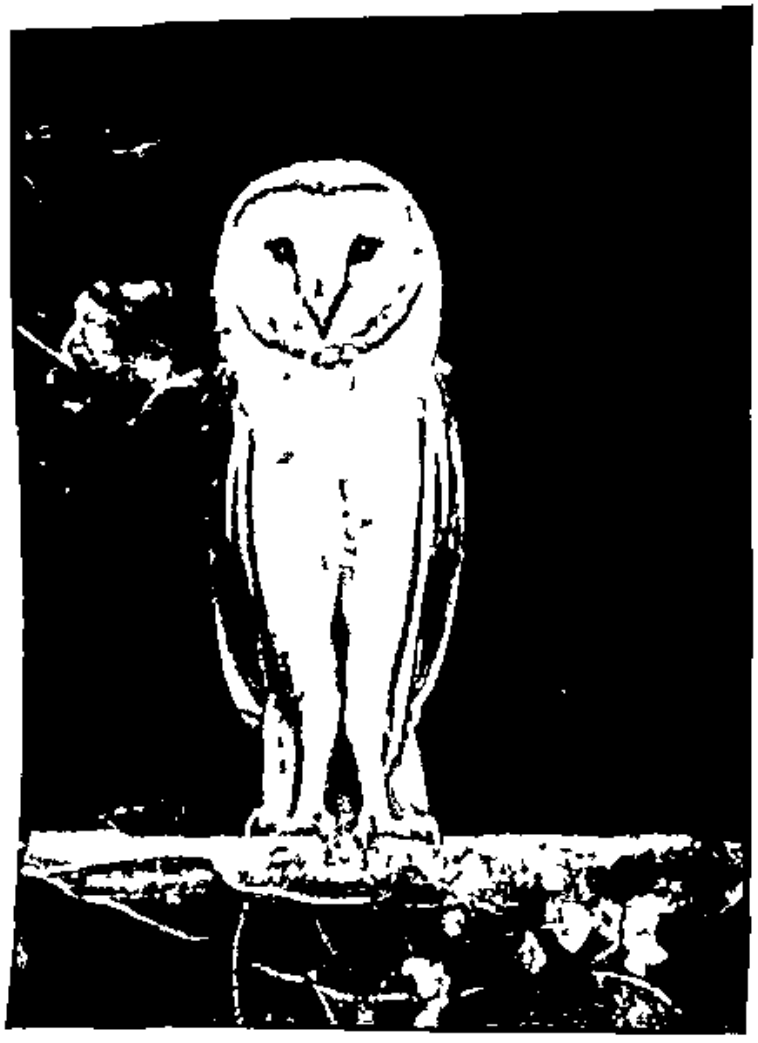
in a large wood; as I looked through the small peep-holes my eyes could feast themselves on a carpet of blue-bells which covered almost the whole wood, while here and there, patches of pale yellow primroses filled up the gaps. A garden warbler was reeling off its marvellous song close to me, four blackbirds with their deep contralto notes seemed to be holding a duel of song within a few yards of my hide; a willow warbler with its rather monotonous undulating notes was uttering them four times every minute; a male chiff-chaff called the notes from which it derives its name incessantly; a thrush which had a nest close by was singing to its sitting mate, and, to crown all, a nightingale, perched on a twig just over my head, was endeavouring to drown all other singers with music that it was worth travelling a thousand miles to hear. For several hours this concert went on, and although no two notes were uttered in unison, and all were singing in a different key, the whole was the most beautiful harmony. Those who have only heard the song of the nightingale broadcast by wireless, can have little idea what wonderful music this small bird is capable of giving, for individual nightingales vary greatly, and I have not yet heard a perfect singer, or one anywhere approaching a good singer, through my wireless receiver, so when I say that my bird on the occasion just mentioned poured out a volume of very marvellous music, I am not exaggerating, and it is instances like this which call the nature photographer to his work and keep him at it.

I have received hundreds of letters from would-be nature photographers asking for advice, and it is owing to the ever-growing band of workers anxious for help, that I have again put pen to paper in the hope that the

suggestions in the following pages, together with my own experiences, will be a real help to them.

Several of my young correspondents have told me that they wish to take up nature photography as a living; to such I say, don't. One or two men have succeeded, but they were the pioneers, and when they commenced, competition was not so keen. Nowadays, there are so many at the work, all anxious to add to their income with the aid of the camera, that there is no possibility of one man making such a success of the work that he is able to make a satisfactory income from it. But as an aid to one's income, there could not be a better branch of photography, the field is so wide, interesting subjects that appeal to the eyes of our critical editors are always turning up; in fact, the nature photographer never need be idle, for the ever-changing book of nature has something fresh to show us on every page, and to those who can read and learn her secrets, and picture them with their camera, there is a fair store of additional cash available.

The nature photographer must be a keen observer; he or she who knows little about the habits of our wild creatures will not be so successful as the nature lover who has studied their ways. Some years ago, two photographers entered the same hide. One was a nature photographer with some years of experience behind him, the other was a good photographer, but a beginner at nature work. The latter had the best apparatus that money could buy. Each exposed a dozen plates on the same bird. When these were developed, it was found that the experienced naturalist had twelve good results, while the other had twelve smudges! The newcomer found that it was the man behind the lens who counted!



Barn Owl



Nightingale, showing a characteristic attitude

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Another important point is that the nature photographer should have a fairly sound working knowledge of photography. The mere "button-presser" who leaves his plates or films for the professional firm to finish will have little success. He must know the value of light; the speed and type of plates required for various branches of nature work, the possibilities of various lenses of different focus, the importance of different development for special subjects, and the selection of suitable papers for printing his subjects on, are points that add to the success or otherwise of the work. I therefore take it for granted that my readers who wish to become successful nature photographers have mastered, or will master, the elementary principles of photography, for without this knowledge a lot of their work will be in vain, and many valuable hours will have been wasted.



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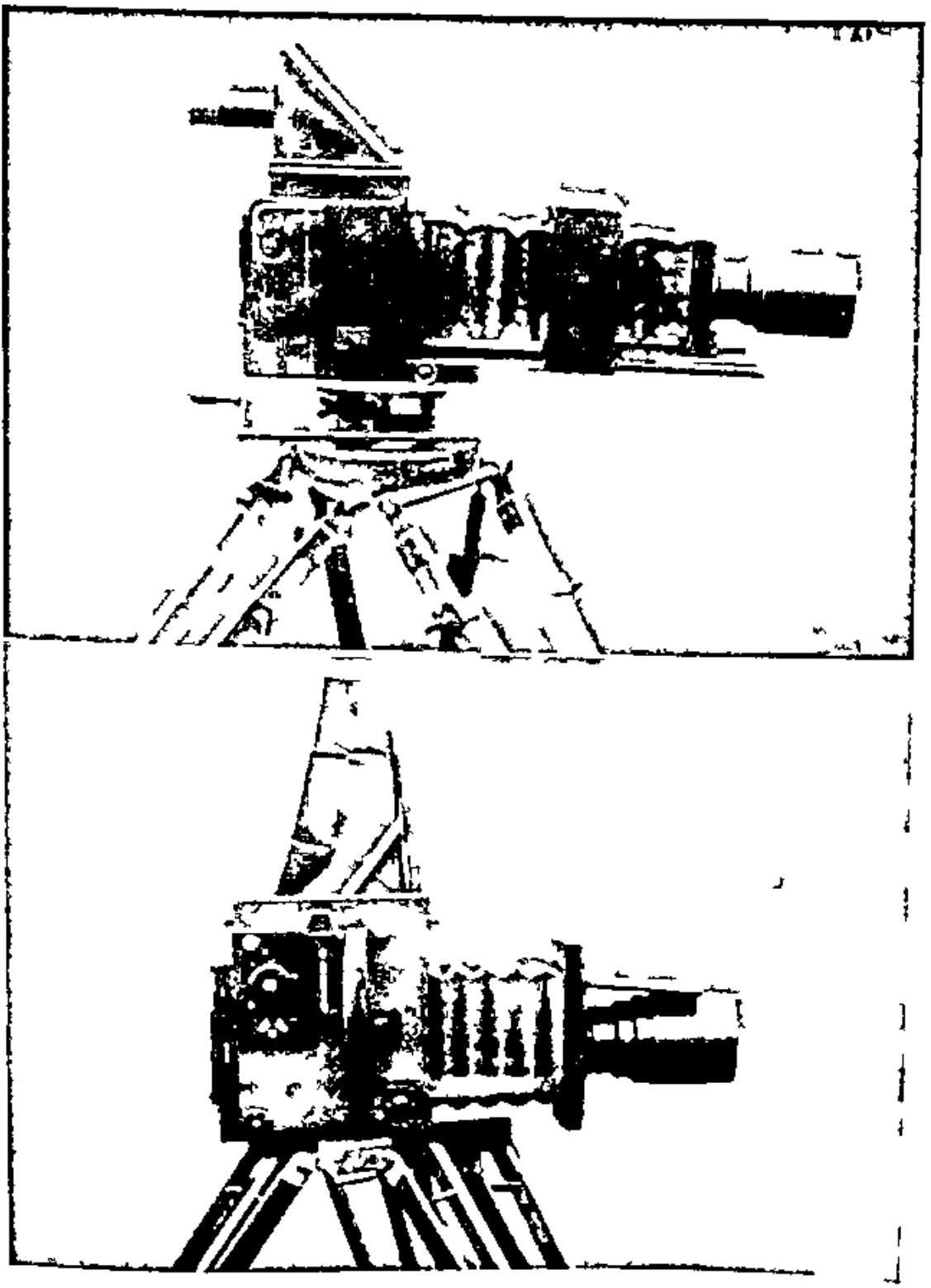
Example of no v photograpl l ow ng soft effect of sno v and deta l n dark parts

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lens. After the War the makers had to discontinue it owing to the high cost of production; they found that what could be sold for £40 in pre-war days, afterwards could not be sold under £120 to leave only a small margin of profit. Now and again it is possible to obtain these cameras through the second-hand dealers, and, providing the shutter is in good working order, they are well worth securing.

For nearly thirty years I have used my "Birdland" camera, it is still in constant use, and as perfect as on the day I made my first exposure, for in designing it, one thing I kept in mind was that the nature photographer's camera must be constructed for really hard and sometimes rough work. Many years ago I was using one of the first cameras of this kind that was made, under rather difficult conditions. I had travelled hundreds of miles to photograph a certain rare bird, and on the only occasion that I could get to its haunt it was raining hard the whole day; it was not ordinary rain that I had to contend with, but rain coming down in ropes, which soaked the photographer in the first hour. However, I obtained quite a successful series of pictures, but the camera suffered. The woodwork commenced to swell, and all the leather covering peeled off. It was, however, a useful experience, for on the later models of this camera the whole construction was strengthened, and the leather covering was stretched and stitched on. Now, nearly thirty years later, although the camera has been through storms quite as severe, it still has its covering on in a perfectly sound condition.

One of the chief assets of this camera is its silent shutter. This is of the focal plane pattern, quite the best for nature photography; it works with a slit at full



*Top* The Birdland camera as designed by the author camera almost fully extended and 17 inch Dallon telephoto lens Tripod with universal top

*Bottom* The Dallmeyer Naturalist s camera with 14 inch Dallon lens

[Facing page 12

made, with better negatives resulting. If you are photographing, say, a sedge-warbler feeding its young, you can stop your lens down to about F16 in a good light, when the sun is not shining, and give an exposure of $\frac{1}{8}$ second with a shutter which does not disturb your sitter. If, however, your shutter makes so much noise that it startles the bird at the moment of exposure, you would have to work with your lens at full aperture, and give an exposure of not more than 1/100 second. In one instance you have a fully exposed negative full of detail, while in the other only a very small portion of your photograph is in focus, and your negative is hard. I have seen hundreds of such photographs in print, and most of them are so bad that it is quite impossible to tell what the bird is without the accompanying title.

Nowadays, it seems quite impossible to obtain a British-made camera with a perfectly silent focal-plane shutter, but the nearest approach to it is that on Dallmeyer's "Naturalists' Camera." When working with this in a well-covered hide the shutter makes very little noise. The extension is nothing like so long as that on the "Birdland" camera, but this difficulty is overcome by using box-panels for the front of the camera on which the lenses are fitted. The camera extension, when closed, is six inches, and it extends to about ten inches, so that with a short focus lens objects as near as fifteen inches may be focussed. A useful point about this camera is that the speed of the shutter may be altered while the shutter is set; a photograph is often spoilt through the light changing at the critical moment of exposure. Many times I have watched an interesting scene at a nest, and have had to allow it to pass, without making an exposure, because my shutter and lens were fixed for a bright light,

and the scene took place while a heavy cloud obscured the sun. A few years ago I made a quarter-plate camera with an extension of thirty inches, fitted with a large aperture lens of twenty inches focal length. I so constructed this that every movement of the camera, including setting the shutter, focusing, and altering the stop on the lens could be manipulated from the back. In this respect it was the ideal camera for the photographer who works in a small and perhaps cramped hide, but its drawback was its weight and size.

The front of the Dallmeyer "Naturalists' Camera" is so firm that box-panels of six or eight inches may be used so that long focus lenses may be brought into play. It is made on the reflex principle, so that objects may be focused up to the moment of exposure. The cost of this camera, complete with telephoto lens, dark-slides, etc., is £60.

But young beginners in nature photography need not be deterred, thinking that such a high-priced camera is really necessary. Good work can be done with quite cheap cameras, providing the lens is satisfactory. For those with a limited purse, a quarter-plate field camera having a double extension is the best. This could either be fitted with a shutter built into the lens, or a roller-blind shutter fixed to the front of the camera and *behind* the lens. The shutter should never be fitted on the front of the lens, as the shy animal will see the movement when it opens, and this is enough to frighten the most confident sitter. The camera should be used on a tripod, and this form of apparatus is quite the best for photographing nests, especially if it is fitted with a swing back. Fixed-focus hand cameras made for use with either plates or films are of little use for nature photography. A



The simplest form of hide constantly used by the author from which the majority of his photographs are obtained

*Left* Camera in position and four sticks as framework

*Right* The canvas covering placed over framework, which is camouflaged with branches, etc
The periscope in position

[*Facing page* 14

camera with a ground-glass screen on which you can focus your subjects is essential. Now and again the amateur may obtain a satisfactory picture with a small hand camera, but even in the hands of an expert the work would be difficult, and not worth the trouble involved.

A field camera as described, with a lens of fair quality, may be obtained for a few pounds; a perusal of the catalogues of any of our second-hand photographic dealers would give several, and as such cameras are not often used in these days of general snapshot photography, really good instruments may be picked up for three or four pounds.

The question of lenses is important; the camera can consist of a simple light-tight box, providing the lens is good. For those, who owing to circumstances have to do their best with very limited means, a second-hand anstigmat lens which could be obtained for thirty shillings or two pounds would give very good results. An endeavour should be made to obtain a good convertable anstigmat, the photographer then has three lenses in one. For instance, we will suppose that the focus of the complete lens is eight inches. By using the front or back combinations alone a focal length of fourteen and sixteen inches may be obtained, with a corresponding increase in the size of the image. In these days of fairly cheap telephoto lenses, such instruments are not made as frequently as before, but many good ones may be purchased at the second-hand dealers. For years I used such a lens, and practically all my early nature photographs were taken with the front combination of an eight-inch lens. If the complete lens works at F6, the single combination would be about F11, so the exposure is increased, but with such rapid plates available this need not prevent the photo-

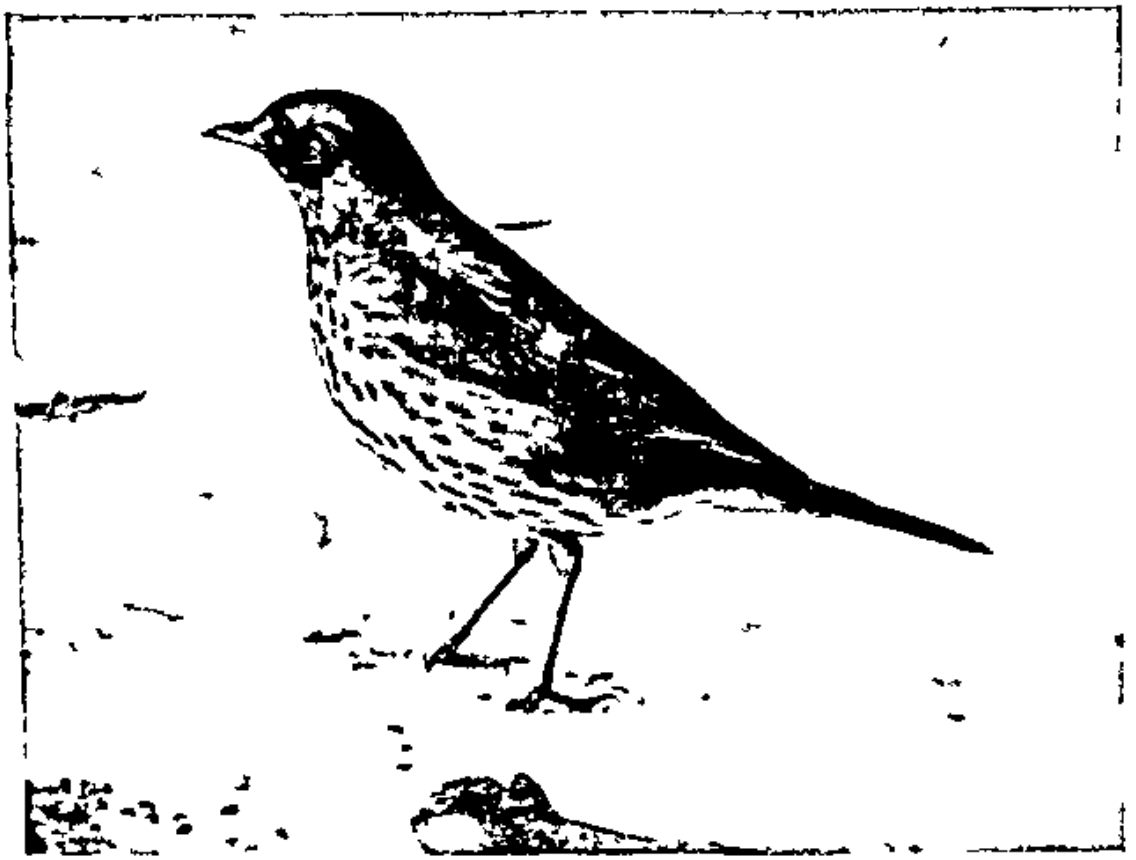
For high-power telephoto work the photographer should use the "Grandac" lens, also constructed by Dallmeyer. It is not possible to give very rapid exposures with this lens unless the light is exceptionally good, but occasions will sometimes arise when the photographer wishes to obtain records of birds or mammals at long distances from the camera. The support for the camera must be very rigid, for with a high magnification the slightest vibration will spoil the photograph. This lens is of variable focus. It consists of a ten-inch portrait lens working at F4, and a suitable negative lens. The full aperture of the lens with the camera at an extension of six inches is F10, but the magnification is equivalent to a lens of twenty-five inches focus. If the extension of the camera is increased to twelve inches, then the magnification is equal to that given by a lens of forty inches focus, but the aperture is reduced to F16. But with our modern ultra-rapid plates, very rapid exposures may be given in a bright light, such as that obtainable on the sea, or over large open stretches of country. By using such a lens, it means that with only a six-inch extension of the camera the photographer may be five times as far away from his subject to get a picture the same size as that given with an ordinary lens, or, conversely, at the same distance, his picture will be five times as large. The cost of this lens is twenty-two pounds.

For high-speed photography of birds in flight, a lens with an aperture of F3·5 should be used. Dallmeyer's "Dalmac" is a very fine lens for this special work, as it gives definition equal to a lens working at F4·5, but requires only half the exposure. With a half-plate lens of this description fitted to a quarter-plate camera, some fine studies of birds in flight may be obtained. The

three lenses, therefore, that I recommend to make the nature photographer perfectly equipped are the following: Dallmeyer "Dallon" telephoto, for general bird and mammal photography; the "Dalmac" for high-speed photography of birds and insects in flight, and the Dallmeyer stigmatic lens for photographing nests, flowers and other still-life subjects.

The best tripod I ever used was the "Ashford." I do not think this can be obtained now, but I may be mistaken; however, it can still be obtained at the second-hand dealers. This has sliding legs, and, when raised to its greatest height, is absolutely firm; many light tripods wobble when fully extended, but the "Ashford," although light, is strongly built, and is so firm that it can be used for a full-size cinematograph camera. You can place a fifty-pound weight on it without it sagging or giving way; in fact, I have often used it as a seat, or as a first step to assist me when climbing a tree. The last one I procured was given me by a London dealer after I had made a small purchase, the reason for this generosity being, as he explained, that he had hundreds of old tripods, and they took up so much room; there has never been a better tripod made for the nature photographer.

Since the advent of nature photography, the word "hide" has become a noun, and, when used in this sense, most know what it refers to. The bird and mammal photographer can use all kinds of devices to outwit the wild creatures, and many of our most successful workers have their own special methods. In my various chapters in this book I have mentioned the kinds of hides I have used for taking certain photographs, but for general all-round work there is nothing more suitable



Song Thrush in snow, photographed by means of electricity

[*Facing page* 18.

than a sheet of dull green or khaki-coloured canvas, which can be fixed over the camera and supported with a few stout sticks which may be cut from neighbouring trees, then camouflaged with material collected in the immediate neighbourhood. Such a hide is not too cumbersome to carry about; for years I carried one on a bicycle, in addition to all the apparatus necessary for photography.

When the camera is fixed up and the hide constructed over it, one or two peep-holes should be made so that the worker inside can obtain a clear view of the nest. When photographing shy birds, it is far better to use a periscope; in fact, this at all times is far more satisfactory than keeping your eye glued to one small hole, from which you can see only the bird or mammal when it is close to the spot focused. The periscope gives a perfectly clear view of the actual place you expect your subject to come to, and, in addition, a view of the whole country before you, which makes it far more comfortable and may prevent you from sitting in a cramped position in the hide.

## CHAPTER IV

# Photographing Birds in the Woods

FORTUNATELY for the nature photographer the majority of birds which nest in a wood choose the outskirts. It is not often that we find birds in the depth of the forest. There are just a few which nest in the most distant parts of the wood, but even these select a tree which is on the edge of a clearing or in a fairly open position. Photographing in a wood tries the skill of the photographer, for even on the outskirts, where we find most of the smaller birds nesting, it is not always easy to obtain good lighting, but, on the other hand, a wood lends itself to the easy construction of a hide. When working in a wood my hide consists of a dull-green canvas cloth about four yards square. This is not difficult to carry, and with it you can make very successful shelters. I have often used it twice in different parts of the wood on the same day, for there is so much material close at hand with which to camouflage it, that the birds and mammals take very little notice of it.

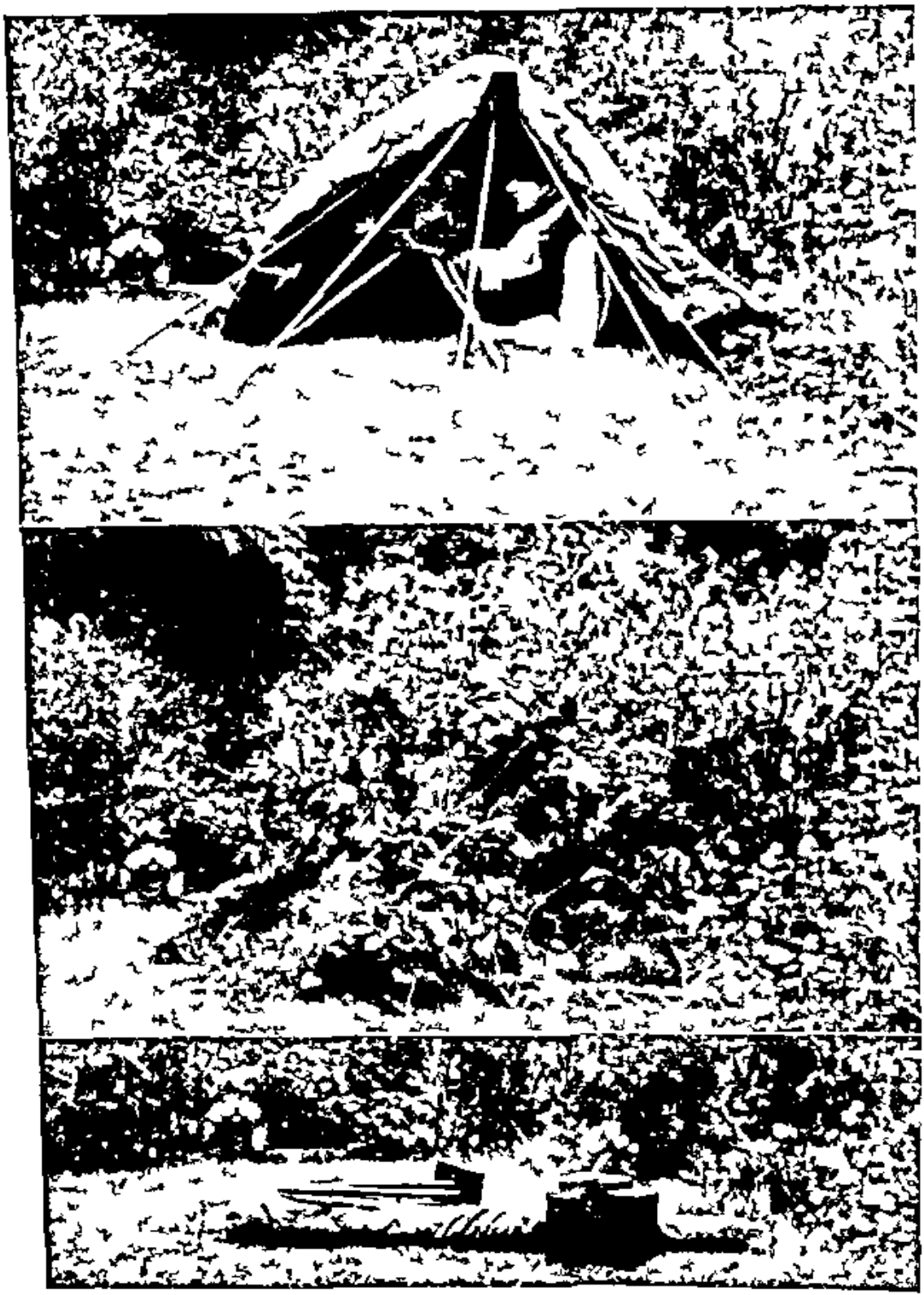
My method when photographing a bird at her nest in a bush or on the ground is to first fix up the camera on its tripod, focus the spot you expect your subject to come to, then cut four sticks about a foot higher than the top of the camera. Two of these are pushed into the ground about a foot each side of the lens, and level with it, while the other two are placed at the back of the apparatus

about three feet from the focusing screen and about four feet apart. Now I fix four sticks on the top, tying them to the upright poles with string. A framework to support the canvas is now made, and if the latter is thrown over the whole a cosy little tent is the result. The sides should be fastened down with pegs (I carry a small mallet for driving them in), and when the whole is secure you cover it with branches and other herbage; if bracken grows in the wood this makes an excellent covering, as it is not so liable to droop as some other plants. It is very annoying to find a piece of grass or a twig in front of your lens after you are tucked away inside. If a wind is blowing, it is important to see that no part of the camera touches the tent, if it does, a gust of wind at the critical moment of exposure may ruin a good subject. On all my lenses I have a hood about four inches in length which slips over the front; this is a great convenience, as it protects the lens from the glare of the sun, and also, and perhaps the most important point is that the bird or mammal is not so likely to see itself mirrored in the glass. When using a lens of large aperture and long focus, the front of it, under certain conditions of lighting, is a very effective mirror, and a creature as wary as a fox would see its own movement reflected in it and bolt before you could make an exposure. Or if you do succeed in taking one photograph, it is probable that your subject will be so scared that you will not have another opportunity. Many bird photographers have seen their bird approaching its nest with all confidence until it actually reached its eggs, then it has given a cry of alarm, taken to its wings, and any amount of waiting will not see it back. The photographer has probably wondered why the bird was so frightened; in nine cases out of ten it has been caused

through the shy creature seeing its own movement reflected in the lens. A good hood fastened on the front will get over this difficulty. It is quite easy to make a satisfactory hood with a strip of cardboard; the inside must be painted with black paint which shows no gloss, while the outside should be khaki or dull green; the only objection to a cardboard hood is that if it gets wet it is liable to sag In dry weather I have often rolled a strip of brown paper into a tube and tied it on to the front of the lens. If you are using a long focus lens, say ten or twelve inches, on a quarter-plate camera, there is no danger of a hood four inches in length cutting off any of the picture.

I have sometimes used as a framework for my tent several bamboo sticks fastened together at the top. After the camera has been placed in position, these are put over it as seen in my illustration, and they make quite a good support for the canvas, but if you wish to make a hide four or five feet in height it is necessary to have rather long poles, and they are cumbersome to carry about. All you require in the form of a hide can be constructed with the four upright sticks as previously described.

Nest finding in a dense wood is not easy, quite the best way is to let the birds show where their homes are concealed. A pair of good field-glasses is necessary, then if you hide yourself among the undergrowth or bushes you are almost sure to see one or more birds carrying food to their young. Some birds are, however, so cunning, that they will go to their nests through the undergrowth, and quite deceive you as to the actual position. An instance of this occurred last spring. My wife and I were wanting to find a nest of the nightingale



A po table but un omfo tab e h de the f amewo k s made of bamboo od cove ed w th a cloth and camouflaged w th b anches

*B om* The whole appa atus packed

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in a large wood which contained about a dozen pairs. Each pair kept to their own little preserve, which was a stretch of woodland about sixty yards square. We knew that it was the custom of the male to sing not far from the nest, and we commenced our search, working round in ever-widening circles from his favourite perch. Some of the haunts were so thick that it was impossible to penetrate them, these we left alone, choosing those with the least amount of undergrowth. There was one pair just at the entrance to the wood, and it was these that we concentrated upon. Day after day we searched every likely spot but failed to discover the nest. In previous seasons we had very little difficulty in locating nests in this wood, but last spring the birds seemed to be past-masters in the art of hiding their homes. After nearly a fortnight of searching and watching we found the male bird still in full song, an almost sure sign that his mate was still sitting. At this period we had to go elsewhere for a few days, but immediately on our return we went to the nightingale wood, and soon after we entered were met by two excited birds which were uttering their characteristic whistle followed by a deep purring note. These denoted that the nest contained young, and as each bird had a large caterpillar in its beak we felt sure that we should soon discover that cleverly concealed nest. We watched them go towards a small clump of bushes, and as they played about this spot we came to the conclusion that the nest was there. We chose two stations one on each side of the clump and watched. A few minutes later both birds in turn went to the ground and disappeared, to fly up later with no food, so we knew they were feeding their young. Now we went to the bush and searched, thinking that we were going to walk

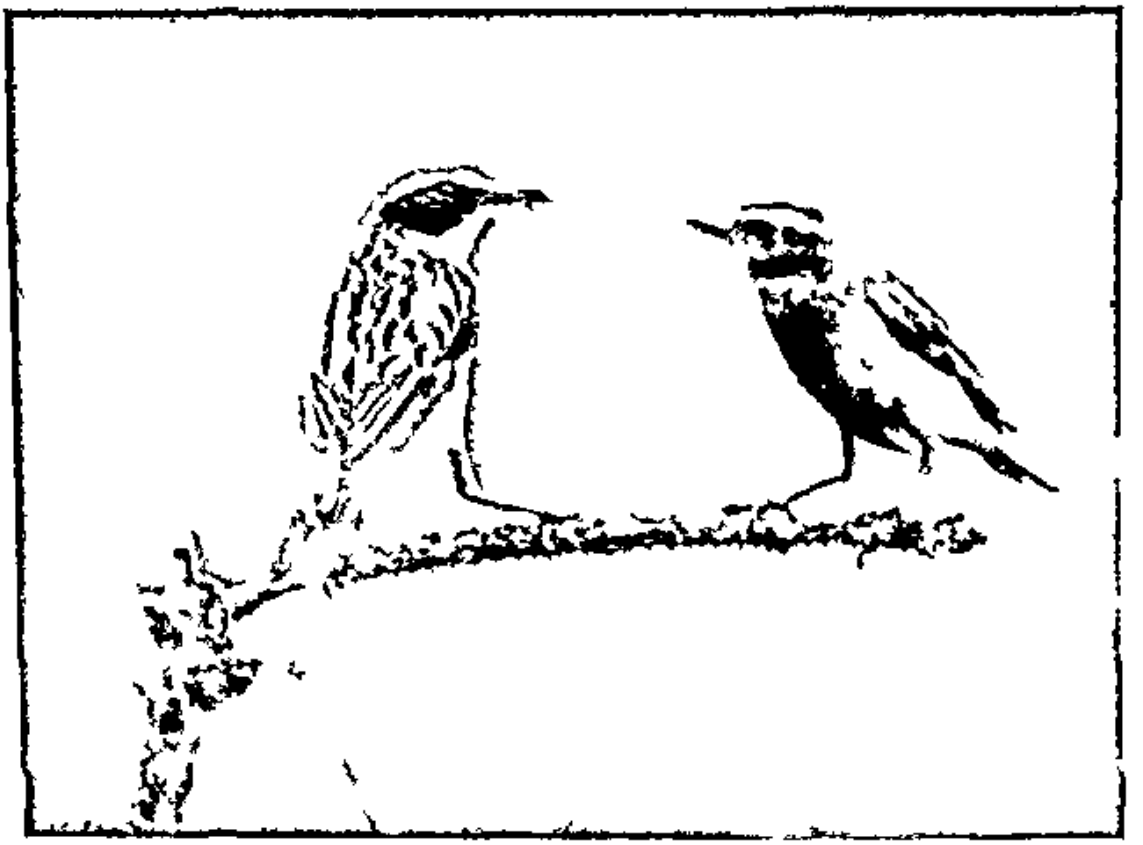
beauty in every gesture. You see the bird coming through the bushes, flitting along lightly from twig to twig, then as it approaches the nest it settles on a branch. At first glance you might say that the nightingale moves in jerks, but this does not describe the actions, for although the bird remains stationary for about a second after each movement, there is a beauty and smoothness in every one. It comes down from a higher branch to another nearer its young, and as it settles it stands upright; a moment later the head is dropped, the tail goes up and is spread, and the wings are lowered; it looks as though the bird is moving from a pivot passed through the centre of its body. Added to all this, the rich chestnut colouring of the bird's back and tail show up so well against the green background, that altogether the nightingale is a very charming bird to watch. The nest is usually built in a dark place, but the habit of the bird in keeping still for about a second after each movement gives the photographer an opportunity to give a fairly long exposure. But there must be no hesitation in the release of the shutter, or you will find the bird has passed on to another action. The best plan is to release the shutter the instant one movement has ceased, then you are sure of getting a good result with an exposure of about half a second.

When photographing a bird like the nightingale, which builds on or near the ground, some charming portraits of it may be obtained by placing a branch near, or immediately over the nest. Select a dead lichen-covered twig if possible, and in a great many instances you will find that the bird will settle on it. Such a photograph is far more satisfactory than one of the bird feeding the young in the nest, where its body is among the leaves and other

herbage. When you have fixed your twig in position (and you can find the best spot to place it by watching the movements of the bird as it arrives at the nest), look at it carefully on your focusing screen. If there are any light patches in the background out of focus, such as a large dandelion flower, or the head of a patch of hedge-parsley, or, in fact, anything that looks prominent, remove it. These objects will reflect a lot of bright light, and they receive more exposure than your bird, with the result that your negative will contain a number of big round dark blotches which will be white on your finished print. There is no more pleasing background for a bird than a mass of green that is out of focus, but just one or two patches, such as a leaf with a glossy surface, or flowers as described above, will spoil the whole effect. Sometimes it is impossible to get rid of such objects, but if the photographer can do so a greatly improved print will be the result.

I have often seen prints of young birds which have been placed on a convenient branch by the photographer, completely spoilt by selecting a spot where half the background consists of sky and the other half of bushes. As the bird is the central object and is in the foreground, all the background is out of focus, and the result is one half of the print dead white, while the other half is quite passable. If the photographer had so arranged his branch that the whole of the background consisted of a thick hedge or a bank of green grass, a much more pleasing picture would have been obtained.

Photographing in trees is difficult work; the photographer must be a skilled climber and must realise the danger of the task. It is difficult to give advice, for each subject requires different treatment. No two trees are





*Top* A pa r of Wh nchats

*Bottom* Spa row hawk and her fam ly

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alike, and it is impossible to say what form the hide should take until the actual site is examined. The camera should first be fixed in position, or the tripod left in position after the nest has been focused, and the hide built round it. A hide in a tree is often such a conspicuous object that it is better to build it gradually so that the birds may get used to it. A rather important point to remember is to see that a comfortable seat is made, for it is a painful proposition to spend several hours astride a branch. Endeavour to fix a small board on a stout bough, or fasten a longer one among the branches so that it is possible to sit in comfort. It is sometimes possible to arrange the canvas cloth around and above the camera, but it should be tied securely at all points so that it does not flap in the wind, and the outside should be covered with branches. Rooks and herons will soon become accustomed to such a hide, especially if the colony is a fairly large one. The birds which have their nests farthest from the hide will, in returning, give confidence to the others which the photographer hopes to obtain pictures of. When the photographer enters his hide efforts should be made by some companions below to drive the owners of the nest from the scene.

The bird photographer will sometimes find a nest of a woodland bird in a tree with a slender trunk with no large trees near. Photography in such a case is easy if the following plan is followed. It is quite impossible to climb the tree or its neighbours, for they would not be strong enough to support the photographer, but the nest itself can be brought to the camera. The first thing to do is to fix three ropes to the trunk a few feet beneath the nest, and these should either be held by three companions or fixed securely in the ground. Now the trunk

is cut through about four feet from the ground, and the whole tree lowered and fastened strongly to the stump which is left. A day later it is lowered another few feet and once more fastened to the stump, and so on until the nest is the required height from the ground. The hide should be built before commencing operations, and left in position so that the parents of the young birds get quite used to it. I have done this several times with such birds as sparrow-hawks and jays, and have never had the owners desert their home or neglect their young in any way. On one occasion I performed this feat with a ravens' nest and obtained a good series of the parents feeding their young. On the day that I took these photographs an exceedingly hot sun was pouring down upon both the photographer and the nest, and owing to the excessive heat I was privileged to look upon an interesting scene in the ravens' home life. About five o'clock in the evening the young were trying hard to find shelter from the scorching rays; one would push its way under its companions, only to be crowded out by another. The mother raven returned with food and saw how her young were suffering, for now all three were leaning on the side of their home with beaks wide open, panting for breath. In the usual way the raven would not think of giving the young water during their stay in the nest, as there is plenty of liquid in the food given to them, but circumstances demanded different treatment, and the old bird seemed to know that it was water they wanted. She flew to a small stream that I could clearly see trickling down the hillside, and when there, called her mate to her. The two birds held a short conversation, or so it seemed, for several low guttural notes were uttered, then both dipped their beaks in the water, filled the pouches under

their beaks, flew back to their young, and poured the cool liquid down their parched throats. I saw a similar instance when watching a pair of reed-warblers at their nest. The latter was built in the previous season's dead reed stems, and there was little shelter from the sun, which was hot, and scorching the babies in the fragile nest. The male was collecting food for the young, but his mate stood over the nest in a most uncomfortable attitude, with her legs stretched wide apart gripping with her claws the sides of her home, her wings were spread, and by doing this she was able to keep her young in the shade, and the air also circulated underneath her. But this was not enough, every few minutes she dropped into some cool water nearby, soaked her feathers, returned quickly to her nest, and standing over her babies allowed the water to trickle down upon them. It was a delightful little scene of home life in birdland, and also showed the devotion of the mother for her young.

Last spring I found a nest of a jay in a slender tree about twenty feet from the ground; by cutting it down gradually I was able to obtain a good series of photographs of the parents feeding the young, while the actual position of the nest was not disturbed in any way. There were four nearly fledged young in the nest which showed the greatest excitement every time their parents returned. During their absence they appeared to be fast asleep, but long before I could detect the parents returning they seemed to know, and standing up in their home called loudly for the food that they knew was forthcoming. The parents waited their turn to feed the family; when one had finished it flew off and the other took its place; although I spent a good part of three mornings in my hide, I could not obtain a photograph of both parents

feeding at the same time The method of feeding was interesting, when the bird returned you could not see any food in her beak, but while standing on the side of the nest, with her four big youngsters clamouring for food, she rolled her head and neck round in a curious manner to bring food up from her crop, when she had fed one baby she repeated this action, and found food for another, and so on until her supply gave out

I took one of these young jays as a present for one of my small boys and regretted later that I had not taken all, for when I returned to the nest the following day to obtain some cinema films of the young, I found them all dead in their nest, a game keeper found the nest, and using my hide as a shelter, shot both parents as they returned with food for their family The young bird is now a fine little fellow, very tame and quick to learn, he has already picked up a short tune and whistles it perfectly, and we have hopes of teaching him to talk

Many of the birds found nesting in a wood make pleasing photographs, and the photographer never need have a dull time in his hide, for there is always something of interest taking place Often I have been enthralled by other visitors which have become inquisitive and even entered my hide Several times a weasel or stoat has peeped in to see what was going on The most interesting visitors that I ever had were a pair of wrens which actually entered my hide and commenced to build their nest a few inches from my face Each time that they entered I kept perfectly still, and these busy little birds worked so hard that their home was soon completed I left my hide in position as I did not want to disturb them, and they eventually brought up a family there, and by putting up another shelter close by I was able to photograph them



Pl otograpl ng a heron s nest
*Inset* Heron s nest and eggs



Jay stand ng by her nest after feed ng her young

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When photographing our small birds feeding their young, such as the warblers and finches, it is possible, by using a little strategy to obtain photographs of both birds at the nest together. A companion, gifted with a certain amount of common sense, is required to assist; his job is to remain outside the hide and to carefully watch the parents returning with food. As a rule you will find that while the male is away the hen is feeding the young, and when the latter hears her mate coming through the bushes or undergrowth with a supply, she slips away, leaving the nest clear for him. The task of your assistant is to wait until he sees one bird coming back with a supply of food, then to keep her from the nest; the bird must not be driven right away, but only just prevented from giving food to her young. This must be continued until the other bird arrives with a supply, then the assistant should move away quickly, and in a great many instances it will be found that both parents will go to the nest, one feeding the young while the other stands by; the photographer must watch the scene carefully to obtain both birds in good positions, then make his exposure. By getting one of my little sons to help me in the manner described, while photographing a pair of bullfinches feeding their young, I was able to get the birds together at the nest on three occasions.

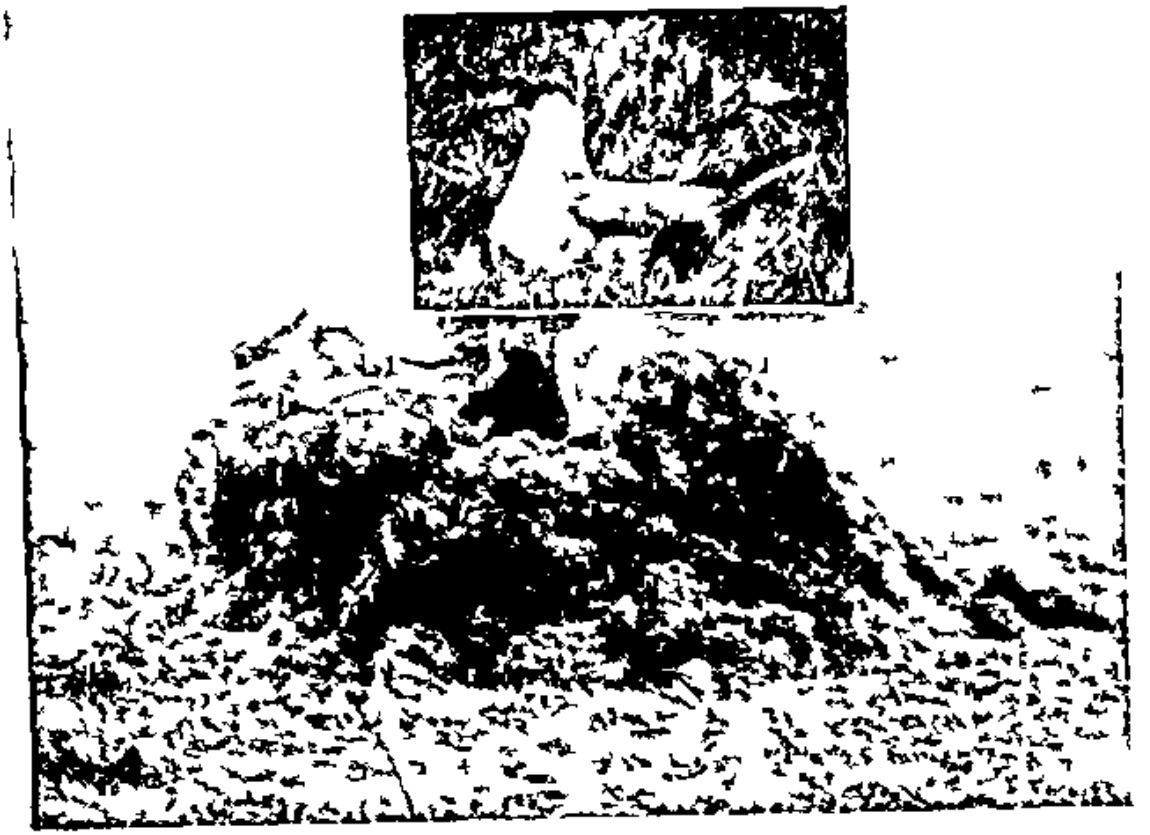
The nesting holes of woodpeckers, which are not often in the best-lighted situations, can be improved with the aid of a mirror, which should be placed on the ground in such a position that it reflects light on to the spot where you expect the bird to alight; such a contrivance will not scare most birds, and it has the effect of greatly increasing the light, making photography possible, where without its aid, an exposure would be useless.

covered it with heather, and left it there so that the bird should get used to it. When on the following morning I made my way across the moor I could see no sign of my hide. I knew exactly where it should have been situated, but as I approached there was nothing on the moor as high as the hide should have been. When I reached the nest, I found the eggs smashed, while the whole of my hide had disappeared, but the ground all around was churned up, and I found that a herd of cattle had visited the spot, and as the little covered tent was an unusual object on their open moor they had attacked it, and eventually I was able to retrieve pieces of the tripod which had been trodden into the ground. The tent itself was in a hopeless mess, as it was soaked in wet peat moss; it was, however, possible to use it again, but not so the tripod.

Quite a good hide can be made with slabs of peat; it is heavy work building such a shelter, but help can often be secured, and if a friendly game-keeper accompanies you, so much the better. The camera and tripod are first placed in position, then the slabs of peat can be built up around. A few stout sticks are required to be placed over the top to support the roof, but when made, a perfect hide matching the surrounding country is the result of your labours. On several occasions I have photographed the merlin from such a shelter, and the bird has taken no notice of it. The only drawback to a hide made in this manner is the dampness; water trickles from the peat, and unless you have a dry board or small seat on which to rest, you find it very uncomfortable. When photographing a merlin feeding its young, you have rather long waits between the visits of the female bird. The male does most of the hunting, and about every hour he comes

to within a hundred yards of the nest, calls his mate to him, and then hands over the food he has captured. The hen now arrives at the nest, and carefully pulls the bird or mammal to pieces, giving the tender portions to her young and devouring the hard parts herself. Soon after I was tucked away in one hide on a desolate moor, the male merlin returned in the manner I have described, his mate flew to him, and he passed the food on; when she returned to the nest the young did not seem hungry, so after giving them just a few small portions she flew direct to my hide, settled in the opening in the peat through which my lens was pointing, and on this comfortable little platform finished her meal! I dare not frighten her off, so I had to sit and watch my bird enjoy her dinner from a distance of two feet; it was a most interesting experience, and afterwards she made a point of sitting on the top of my hide to rest between the visits of her mate. When making a hide of peat in the manner described, a framework of wood should be used to make an opening for the lens, a small box about eight by six inches with the top and bottom taken from it is very suitable; without this, the peat is liable to sag during the day, and there is nothing more annoying than to find your lens covered after you have taken so much trouble, for it is impossible to do anything to remedy the annoyance without getting out of your hide, and practically rebuilding the front. A box used in this way will obviate any such difficulty arising.

On a large moor on one of the Orkney Isles I was trying to photograph a Richardson's skua. My hide was made of peat and heather, but as it was not high enough, I placed my light raincoat over the top, this made quite a good cover. My friends then left me, and





*T p* Th h de used b the author when photog aph g the R char on s Skua

*In* R cha d on Skua t ng

*B ow* Cu ew a n ng at her re t.

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I waited for my bird to return. As her egg was just commencing to chip I knew I should not have a long wait, but before I obtained my photographs a thick mist descended on the moor. However, a white mist, providing it is not too dense, makes very little difference as far as exposure is concerned; in fact, it gave me the kind of light I prefer, for it is infinitely better than a blazing sun which throws such heavy shadows. I obtained my pictures, but found on leaving my hide that I appeared to be on a small island, for the ground sloped down all around me, and the mist which was now becoming thicker shut out the view in every direction. I had no compass with me, and knew it was folly to attempt to find my way to my destination, which was several miles away.

The only thing to do was to wait until my friends appeared, but I had many doubts as to whether they could find me. At intervals I gave three loud blasts on a whistle, and later in the day, when I was numbed with cold, they discovered me. The skuas belonging to the nest took little notice of me as I waited by my small tent, they evidently thought that anyone who looked as miserable as I did was quite harmless. When the gamekeeper who showed us the nest started out in the morning he had a large flask, which seemed to interest him more than the birds, but when he arrived with my two friends in the late afternoon, I was very thankful to find that that spacious flask had something left in it!

It is not a pleasant experience to be lost on strange land. But it occasionally happens that the bird photographer who goes to these lonely places is inconvenienced by a thick mist descending after a fine start. One such experience I shall never forget. We were climbing one

If any of my readers should ever find themselves in a similar predicament, it is always fairly safe to find and follow a stream, for this will lead to a larger river below, and by still keeping this in view you are sure to come to civilisation sooner or later.

On another moor in the Outer Hebrides I attempted to photograph another skua. The weather on this occasion was the opposite to that experienced on the moor in the Orkney Isles. It was the same period of the year, early July, but it was sweltering hot, and we found it a tedious task carrying the cameras the few miles to the skua's haunt. The nest was built right out on the open moor, and there was not even heather to help to camouflage the bird-tent. But as the skua at one nest appeared to be fairly confident, we fixed up the camera, hoping that she would return. My hide on this occasion consisted of a plain khaki tent, but before fixing it in position we dug a square hole in the peat about two feet deep. This is often a good plan, for it makes a comfortable seat for the photographer. He can place his legs in the hole, and sit on the ground, and this is a far better method than attempting to squat on the ground itself, for if you do the latter you get terribly cramped, especially if several hours are spent in the hide. After I had been in my quite comfortable tent for a couple of hours, water began to rise in the hole, and in another hour it was up to my knees ; however, as the weather was so hot this cool water was rather a pleasure than otherwise. I was using two cameras, one for plates, the other for cinema films. After I had been in my hide an hour the skua returned, and after exposing a short length of film I wanted her to rise from the nest, to obtain another set of pictures of her alighting. I shouted at her, but this had no effect, then

I banged two metal dark slides together, and this did induce her to leave, but only for a minute or so Eventually I found it impossible to make her move, so I collected a few objects from my photographic kit that I could spare, and, lifting up the side of the tent, threw these at her. The effect was more than I expected, for the bird retaliated by attacking me! She flew to the top of the tent, settled there, and tried to peck a hole through I punched at her with my hand, but she continued to attack, then went back to her egg I changed my camera (for when working the two it is better to fix up the cinema camera first), and fixed my plate camera in position The former is larger than the plate camera and more difficult to adjust, and as it is far from easy to arrange it under a hide, I always make it a rule to build the hide round the apparatus But the cinema camera can easily be taken down, and without moving the tripod the plate camera can be screwed on, and you will find that the tripod will need very little adjusting to get it in the correct position When my plate camera was ready, the skua was back on her nest, and I obtained a good series of photographs, but later she attacked me again When I eventually left my hide the surprise of the skua was great, she fluttered round her egg, flew overhead, and seemed undecided whether to attack me again or not. However, she did no further damage, and I left her haunt.

The walk back to the small inn where we were staying was a trying experience Not a breath of wind was stirring as I made my way across the large moor to the rendezvous where I was picking up my companions I was overloaded with two cameras, a heavy tripod, and all the other apparatus including my tent. Every now and

then a vicious insect bit me, they called it the horse-fly in those parts, and its bite was not pleasant! Once I dropped all my apparatus as one gave me a terrible nip on the back of my neck, and many times on my journey I had to halt to drive them away.

Our walk back to our inn along a straight road four miles long will ever be remembered. Directly in front of us the sun was going down, and even now it seemed to be hotter than in the day. It was like walking into the glaring headlight of a car, with the addition that the heat was scorching our faces and arms. Right at the end of our long, long lane, we could see the whitewashed inn, which, as we trudged on and on, seemed never to get any nearer. We were parched with thirst, so we endeavoured to make the journey shorter by discussing what drink we should call for when we arrived. The general verdict was a shandy-gaff in a quart pewter pot. At last we reached our welcome haven, and the drink we called for stands out as the most satisfactory of my life!

I believe some very excellent photographs of our mountain birds could be obtained in the winter out on the open moors by those who could stand the rough conditions. I tried it once, but was never anxious to repeat the experiment. For some time previous to this I had thought that I should like to attempt to photograph the buzzard in the winter months, so I and two companions made our way to a lonely spot on the Welsh mountains. We arrived at our station on a Saturday night, the village was pitch dark, and it was raining heavily. After a short search we discovered the chief inn, and there chartered a pair of good horses to take us the ten miles to the small inn which was to be our headquarters. It was a novel ride, for we could barely see beyond our

horses' heads as they travelled on. At ten o'clock we drove up to a rather primitive inn, certainly the strangest place under this name that we had ever stayed at, but when your work takes you into the loneliest places in the British Islands you learn to appreciate even a place like this. It rained the whole of the following day, and such furious rain it was that we decided to remain indoors, with the consolation that such a storm must surely cease on the morrow.

Monday arrived, and it was, as we had hoped, a bright, fine day. The place we had decided on for our photography was on a wild and lonely hill about five miles farther on, and right in the heart of the mountains. The whole of that day we were employed in building a stone shelter in which to hide with our cameras, but when the sun had set we found our work only half done. On our way home we passed a farmhouse, and were able to obtain a good tea. Just after leaving, we encountered one of the very worst hailstorms that three hardened travellers in these Islands had experienced. Although we were to a certain extent protected with mackintoshes in less than a minute we were soaked to the skin. It was impossible to face the storm; we just had to crouch down with our backs to the large hailstones, and before the storm had passed we were the most miserable objects.

Our hut was completed by four o'clock the following afternoon, and a very natural hide it appeared to be, it just wanted a fall of snow to complete the camouflage. To our delight, before we reached the foot of the mountain, snow began to fall, and half an hour later a real Welsh blizzard was in progress.

The five-mile drive back to our inn was a memorable one. For four miles we travelled right in the teeth of

this great storm. At first it was not freezing, and most of the snow melted as it settled, but a colder wave came quickly upon us, and by the time we reached our inn we resembled travellers from the Arctic regions. Long icicles were hanging from our hats, and our waterproofs were covered with a quarter of an inch of solid ice, and on taking them off they stood upright on the ground as though made of metal. Our hands and faces had frozen ice on them, and we were almost frozen ourselves. We experienced for the first time what a mountain blizzard is like in the winter, and I am not anxious to go through another experience like it.

The next morning we turned out at six o'clock. The snow had ceased and partially melted, but the mountains were still white. When we began our walk of five miles through the valley, some of the stars were shining overhead, but slowly these gave way to a brighter sky, and the dark outlined hills put on more real shapes. Never have I seen the old hills of Wales look finer. I have seen them in the spring clothed in a new and ever-brightening green, with some of their wooded slopes covered in bluebells; I have been among them in the hot days of August when the fresh green of spring has changed to the duller garb of summer; I have looked upon these giants that guard the valleys when purple heather has told me that this is just a burst of glory before the cold and death of winter. The previous day the mountains were dead, their bright colours had gone, and the beauty of other seasons had perished. But on this cold winter morning they were magnificent in their white glory. They were clothed in a new dress of virgin whiteness, and then the sun coming up lit up the summits, throwing long shadows right across the valleys.

A wood lark above the road, perched on a hummock on the hillside, was singing loudly, a robin in the centre of our path looked surprised at the early wanderers, high up over the river a raven was going out on a food-hunting expedition, and two buzzards were climbing the air above the hills But what was more interesting, three kites were circling round us, not more than eighty yards away We waited some time, watching these rare birds, and admired their glorious flight Those who have not seen the kite on the wing do not know what perfection in flight is As we carried our two cameras up the mountain to our hut, we had hopes and imaginary visions of one or more of this almost extinct British bird coming to our bait, a hope, too, that was realised, as I shall explain

Our hut was reached our bait, consisting of a dead sheep, was placed in position, our cameras were fixed up and focused, and then we closed up the entrance and waited

After about two hours of this silent watching we both realised very vividly that bird photography on a Welsh mountain in the depth of winter was far different to the same work in the summer! A strong wind was blowing straight towards us, a favourable wind certainly, for it would blow our scent away from our bait, if a bird of prey did alight But as a snow-cloud was coming up we expected that photography would be impossible A few minutes later the snow commenced, slowly at first, but quickly increasing We could hear a pair of buzzards calling overhead, and expected them down, and a raven also discovered the carcase The other side of the valley was almost hidden from our view, and our hut was soon covered with snow We were almost frozen,

although so well sheltered, and when six hours had gone by we crept out, for we had endured just about enough. We left our cameras inside for the night, and then attempted the descent of the steep hillside, which in one place was almost a cliff. Six inches of snow covered the ground, making it a heavy and tiring walk back to our inn.

The next morning we were up again at six o'clock, and again saw our friends the raven, buzzards and kites. We reached our hut before sunrise and found that a lot of water had accumulated inside. We quickly arranged our cameras, but found that the woodwork had swollen with the damp, but not too much to make it impossible to use them. My friend was in the furthest part of the hut, and I was just fixing up a large clump of ivy which concealed the entrance. At the same moment we both saw on the focusing screens of our cameras a kite alighting on our sheep, it had its great wings raised over its back, and was in a perfect position to make a wonderful photograph, but the bird saw the movement of the ivy, and did not even close its wings before springing up into space. Neither of us had had time to place a plate in our cameras, but we both saw on the screens of our cameras a picture that "might have been"! It was a picture of a lifetime lost through movement, and was one of the keenest disappointments I ever had. We waited on and on, with the water running into our hut—it was trickling down in a dozen streams through the roof—and at three o'clock in the afternoon, when light was too bad for photography, we left. After our walk to the inn and a good meal of vegetables, for meat could not be procured in this remote village, we decided to try again on the morrow.

All that night it rained in torrents, but cleared about

seven o'clock the next morning; again we tramped the five miles to our hide, and spent another five hours' inside, but the only visitor that put in an appearance was a carrion crow, although buzzards, ravens and the kites were near us, but all seemed suspicious, and so our three days' *vigil ended, and we were hopelessly beaten* We had experienced a week of the very worst weather they had had on those hills for many years On the following Saturday the very clouds seemed to be coming down, so we packed up, drove ten miles to our station and went to our respective homes

The experience thus gained showed me how to proceed if I ever attempted the work again The hide should be made many weeks before you intend to commence photography, also a dead sheep or other bait should be placed in position, and photography should not be commenced until the whole of the carcase has been devoured, then another should be placed in position so that the birds get quite used to seeing the food in a certain spot And a most important thing to carry out is to see that when you go to your hide a party of five or six go with you, so that when you are ready to commence work they can walk away *If you should be using a telephoto lens, an* empty beer bottle should be fixed in the same spot as your lens will occupy, so that the visitors to the bait shall see a large round gleam or reflection If this is not done, the brilliancy of the glass of your lens will surely frighten away any birds or mammals that might come near I find that it is an excellent plan to always place a bottle in position when building a hide, for the gleam from the lens has kept more birds from their nest than the photographers have any idea of

Many of the birds which nest on the big lonely spaces

are difficult to photograph. The photographer must use all his wits to overcome their shyness. The most knowing bird that I ever attempted to photograph was the grey lag goose. It has often been stated that the goose is a fool of a bird, but this applies only to the tame geese of our farmyard, the wild goose on its lonely moorland home is one of the most suspicious creatures to be found in our islands. I have never seen a bird so wary in approaching its nest, and the wild grey lag goose has seldom been photographed in Scotland. In one well-known haunt of the bird, where about a dozen pairs nest on an area of several thousand acres, photographers have returned with excellent photographs, and as I found it such a difficult task to obtain photographs I asked the head keeper why it was that others were able to secure their pictures so easily. He explained that a few years previously he had taken a clutch of wild goose eggs and hatched them under hens, and since then he had had a small flock of tame geese. These paired up and nested close to his house, and when he whistled his hens for their food the geese appeared with them; in fact, they were thoroughly domesticated, and it was these birds that many photographers were unconsciously photographing, thinking at the time that the wild grey lag goose was an easy bird to obtain pictures of. This keeper was a kind-hearted man and did not like to see the photographers who had travelled so far to obtain their photographs go away empty-handed, as many assuredly would have done if they had attempted to photograph the wild bird. On one occasion the keeper whistled the birds so that I could obtain a glimpse of them.

The wild goose in this particular district builds her nest among tall coarse heather; this came up to our

shoulders as we pushed our way through, it was heavy going, as the ground underneath was exceedingly rough and full of holes. The goose makes her large nest of down plucked from her body, and as there is a mass of this all round the eggs, it gets blown about in the wind. The keeper showed us that the most successful way to find a nest was to search for tufts of down sticking to the the tall heather stalks, then, having found some, to tie a white handkerchief near and work round the spot in ever-widening circles. By doing this we discovered three nests. One was in rather a favourable place for photography, but the keeper said that the goose would not return if a bird-tent was erected near. After considering the matter, we decided to dig a hole in the ground four feet deep for the camera and myself. We were able to do this as there was a piece of rising ground thirty feet from the eggs, so that although the camera was low, a good view of the nest could be obtained. The camera was fixed in position, then the tent was placed over this, and on top of the whole the keeper arranged a big pile of heather. A very successful hide was made, the only doubtful part was the opening left for the lens to point through.

When all was ready the keeper and his companion left me; after the sound of their oars striking the water as they rowed away ceased, I seemed to be alone in the world, I have never experienced quite such a silence as while I waited on that lonely heather-covered island. Not a sound of any kind came to my ears. One hour went by, and I knew that my goose was nowhere near, for I could have detected the noise of any movement on the water or land within twenty or thirty yards. Another hour passed, and still no sound or signal to show that the bird was



The h de u ed by the au hor wh n photog apl ng the G ey Lag goo

*I* G ey Lag goo e tand ng by he nest



The h de u ed by tl e author hen photograpl ng tl e Black th oated D ver

*In et* Black tl oated D ver s tt ng

[*Fa ng page* 46

returning. The third hour was passing, and I was just about to give up when that great silence was broken suddenly by loud discordant cries, "kee-wonk, kee-wonk," and intermingled with these there was a loud splashing away to my left and beneath me. I then knew that my goose had returned to the vicinity of the nest, but I could tell by the commotion in the loch that there was more than one bird, and I wondered if it was the male driving his mate on to the nest, a thing that many male birds will do if the hen remains away from the eggs for what they consider too long a period. However, a moment or two later I heard the slow, measured footsteps of the great bird as it came up the slope to my hide.

When the bird photographer has travelled many hundreds of miles to see a rare bird, and when he has pitted his wits against it, and at last sees or hears his quarry coming within photographic range, it is an exciting moment. At last I could see the goose standing just outside my hide. As it was dark inside she could not see me, but I could note all her movements, or watch her as she stood there erect and silent. The only sound seemed to be the beating of my own heart, and I wondered if the bird would hear it! I was anxious to know what she would do when she moved, would she go to her nest or fly away? After standing quite motionless for many minutes, she lowered her head and poked it into the heap of heather and looked critically around; then she withdrew it, walked one pace forward and poked it in again. It seemed to me that she must see me, and if it had not been for the coarse canvas covering she must have detected the photographer inside. But she went on walking slowly round my hide, examining it from every standpoint, and after taking a solid hour in which to do

this, began to walk slowly down the little lane we had cut through the heather leading to her nest. Before she reached this, and directly she was in the part I had focused, I made my first exposure, changed my plate and released the shutter again. The instant I had done this she sprang up, opened her great wings and flew away, and did not return again to her nest while I remained in the hide.

My next attempt was at a nest which contained three eggs. Here I made a very successful hide, camouflaging it with heather, and within a couple of hours I had exposed about two hundred feet of cinema film, showing the bird arriving, turning her eggs and settling down. I then wanted to change my cameras so that I could obtain some still pictures of her, so decided to let her sit for some time before doing this, but while I was having my lunch a piece of paper made a slight rustling noise, which was quite enough to send the shy bird away, so I should have stood little chance of changing the cameras.

We discovered a nest containing three goslings, so we thought that here we should have better fortune. A few minutes after I was settled in my heather-covered tent the mother returned, but instead of settling on her nest, as I expected she would do, she went to a spot about three yards to the left, where I could see her, but not obtain a photograph. The goslings were calling, but did not go to her, as they were evidently very cosy in their large nest of soft down. The parent goose commenced to preen her feathers, and this I find an almost infallible sign that the bird has no intention of returning to the nest. I have seen it dozens of times, and I have never known a bird to come to the spot focused after

she once commences to attend to her toilet. On one occasion I was photographing a buzzard; she came to the nest several times, then something startled her, and she sat on a rock near by, and for the rest of the day preened her feathers. I have often wondered if this is a little ruse to deceive her mate. In a great many instances the male will drive the hen back to the nest, but when he returns and finds her busy with her feathers he takes little notice. I have looked upon this little incident when photographing all kinds of birds, and it is such a definite sign that they have no further intention of visiting the young while I am in my hide that I now make it a rule to pack up and try again on some future occasion.

For over two hours the goose kept on with her work, then I witnessed an incident which will show that the goose can at times be a very foolish bird. There was a flutter of wings overhead, and the next moment a hooded crow swooped down and carried off one of the goslings; he picked this up as he flew past the nest, and strange to say, although the mother goose saw him, she made no attempt to protect her youngster. Ten minutes later the robber returned and carried off gosling number two, and still its mother was quite unconcerned. I decided that if the outlaw came again I would attempt to drive it away. In my rather cramped position in my hide I could not see the crow approaching, but a few minutes later I heard its wings as it flew over me, and in the same second saw the flash of its wings as it darted down at the nest. I gave a loud shout, but was too late, for the crow had taken the last gosling. All this time the mother sat there as though she was brooding over them, and not one single effort did she make to prevent her nest being robbed. It was my shouting that eventually roused her,

and as she too flew away there was nothing to do but to pack up and make my way back to my destination

The nature photographer must always adapt himself to the surroundings On a neighbouring island on the same loch I found the two large eggs of the black throated diver These were laid close to the water's edge, but there was no place on the small island where I could obtain a satisfactory view of them, so I set to work to construct a hide a few feet from them out in the lake itself The water was quite shallow, not more than a foot deep in the place I selected A bird tent rigged up there would have been out of the question, so I constructed a small round hide of rocks and large stones There were plenty of these on the margin of the island, and after a few hours' work a very satisfactory shelter had been made. There was plenty of room inside for my two cameras, while a large rock had been placed in position as a seat, and two smaller ones to rest my feet on A few loose boards from our boat were also utilised as a small platform on which to place my slides, changing bag and other odd apparatus The holes between the rocks were filled up with grass, and when finished it looked a very natural hide I spent two hours in it on the first day, but as the diver showed no signs of returning I left, deciding to try again on the morrow I was in my hide at seven o'clock the following morning, and a very few minutes after the head keeper left in his boat the bird returned and I secured all the photographs that I wanted

Both the Kentish and ringed plovers make charming subjects for the bird photographer to practise upon , they are both confiding little birds The Kentish plover is found nesting in only one haunt in England , I am giving

away no secrets when I mention that this place is that great tract of shingle on the south coast of Kent, Dungeness, for all British ornithologists know of this fact.

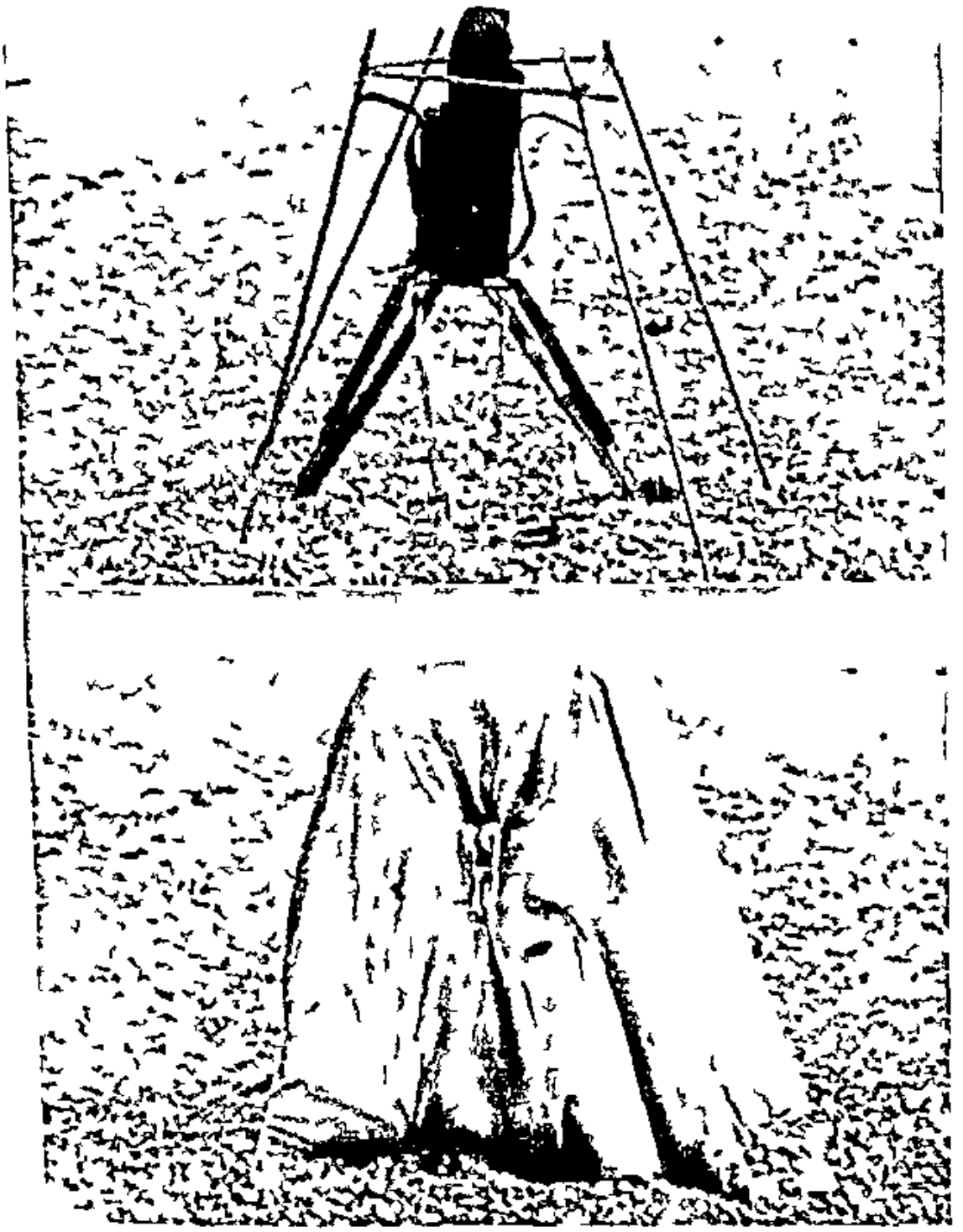
For hundreds of years past the sea has been slowly receding on this part of the coast, leaving behind an extensive stony beach many miles long and about four miles in width. On this there is not much vegetation, here and there a few stunted furze bushes, and little patches of half-starved grass, and an occasional wild flower that can exist on such barren land. On this stony desert we find many interesting birds, including the Kentish and ringed plovers, the stone curlew or Norfolk plover, the redshank, the lesser and common terns, a colony of black-headed gulls and several other species. On one visit to this beach I found and photographed a sparrow-hawk's nest in a stunted bush about five feet from the ground.

Building a hide on a place like this where there is no natural cover calls for a little ingenuity from the bird photographer. The chief thing to guard against is movement, for the sides of a tent flapping about in the wind, which is always more or less present on this great open tract of country, is one of the surest things to keep a bird from returning to its eggs. But as there is nothing that can be used to camouflage the tent, the worker must rely upon this. The first thing is to make a sound framework to support the canvas covering. I show an illustration of the tent I used when photographing the Kentish plover and other birds here. After fixing the camera in position (it is my cinema camera shown in the illustration), I fixed up a number of bamboo rods, tying them securely together at the joints; over this the tent was thrown, then the sides were fixed down securely with shingle

piled against them, and I found that by stretching the sides in this way they were kept quite firm.

The most difficult thing in photographing the birds on this beach seems to me to be discovering the eggs, especially where the Kentish plover is concerned. The first thing to do is to walk about in the spot where you think there may be a plover, then, when you see the small bird running quickly away, you lie full length on the stones and watch it with your field-glasses. If you have patience, and providing you are not too near the eggs, the bird will show you where these are concealed by returning to them. When she settles down you take your landmarks as carefully as you can, then, when you think you have the spot where she is sitting firmly fixed in your mind, you jump up, taking no notice of the plover as she runs away, and make your way to the place she left. When you reach it you stand still and look carefully around, and if you are fortunate you may discover the eggs laid on the bare stones on your first attempt. But they are so much like their surroundings that you may be within a few feet of them and miss them. On this visit we had to make three journeys to the place where we saw the bird settle before we discovered them.

After I had been in my small tent for about half an hour the Kentish plover returned; she showed very little concern at the strange erection that had sprung up near her eggs during her absence, but quickly settled down. After she had been sitting for about twenty minutes she rose from her two eggs, went to a spot a few yards to the left and settled down on the stones She remained there for about the same time, then came back to her eggs. As she did this at fairly regular intervals during the day I thought it rather a remarkable performance, so after I



Hide used by the author when photographing the Kentish Plover

*Top* Cinema camera in position on the bamboo framework.

*Bottom* Camera covered and canvas fastened down with stones

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had finished my photography I examined the spot on the shingle that she seemed so fond of resting on, and found to my surprise that she had a third egg laid over there! This enterprising little bird was therefore endeavouring to hatch all three. She certainly had a difficult task, and I was not able to find out if she succeeded, but she deserved to.

The ringed plover, a close relation to the bird just mentioned, is fairly common all round our coasts where there are suitable nesting sites. It was on a wild part of the Suffolk coast that I obtained photographs of this interesting little bird. During a busy spring I allotted one day for this task. My wife and I left our home before six a.m. and motored the one hundred and thirty miles to the haunt. Soon after ten o'clock we were endeavouring to fix the hide in position. But this was difficult, for a strong gale was blowing along the shore; however, we at last managed to get the thing fixed up, but found it impossible to keep the sides of the tent from blowing about. After waiting for about two hours there was no trace of the plover returning. I then signalled to my wife, who was waiting about two hundred yards away—she had been watching the bird with field-glasses—and reported that it appeared to be very shy, and would not come near the flapping tent. We then endeavoured to fix the hide more securely; we found several pieces of drift-wood, and large patches of seaweed, which we utilised, then when all was ready we were standing close to the eggs, looking around to see if there was any sign of the little plover. To our surprise we saw the bird coming up from the sea directly towards us; it was walking with its head down in a very business-like manner, then, to our further amazement, came right up to us

length to slightly lift the lens, this made it quite firm, but I was not able to stop the lens down, as a quick exposure was even then necessary. After spending about an hour with our charming little bird friend, we packed up, and as we dismantled the tent, and packed up all our apparatus she sat on her precious eggs, and gave an occasional "peep-peep" to show that she was taking an interest in us! In all my experience I have never come across such a tame bird. I have often thought that if all birds were as confiding as this wonderful little ringed plover there would not be many bird photographers, for it is the uncertainty of the sport, and your efforts to pit your wits against the cunning of the wild creatures that makes nature photography so fascinating.

It is not often that the naturalist comes across such confidence in our wild birds. I have had very few experiences of such a nature. Many years ago I found a water-rail which was remarkably tame. This bird took no notice of me as I approached, and as I had my camera with me I was able to obtain photographs. It walked about the meadow a yard from me, showing no concern at my presence; I was able to pick it up and examine it, I threw it into the air to see if it could fly, but it travelled perfectly, then settled on the margin of a lake and swam about before me. On one of my visits to the Orkney Islands, I was taking a stroll one morning without my camera, and came across a landrail with her little family walking about leisurely in a road. The mother was rather concerned, but refused to leave her babies, and as these had never seen a human being they showed no fear, but walked about at my feet. I ran back for my camera, but when I returned to the road the

whole party had disappeared, and a fine photograph was lost through not having the apparatus with me.

When photographing on the open moors a little ruse will often have the effect of bringing your bird to her nest, that is, if she has shown little inclination of returning. For this you will need a companion. If the bird has not come back within two hours you signal to your assistant to come to you, he then walks about close to your hide for ten minutes or so, if he can do something in the way of digging a hole, or pulling up a few roots, so much the better, then he goes slowly off, and right away from the vicinity of the nest. Of course, you must not show yourself during the time he is near you. It is sometimes surprising how quickly some of the shyest birds will return after this little piece of strategy. I once spent four hours in my hide attempting to photograph the Dartford warbler; the young were fairly large, so did not suffer for this long period without food. During the whole of this time the parents would come near the bush, but although they had food in their beaks they would not go to their young. At one o'clock I signalled for my assistant to come to me, and I asked him to fuss about my hide in the way I have described. In less than five minutes after he left me I had exposed two plates, and in the next hour obtained all the photographs that I required.

The Norfolk plover is a bird which appeals to many photographers; it is found on some of the loneliest plains that we have in this country, and if we can succeed in outwitting it, good photographs may be obtained. There is one haunt of this bird that I have often visited; the barren plain stretches for miles over undulating country, rough flints and patches of chalk strew the



Stone Curlew

*Inset* The same b rd s tt ng

[*Fac ng page* 56

ground, while here and there little patches of colour show where wild flowers which can exist on such poor soil are flourishing. On two or three occasions we have searched for the eggs from a car, and this is quite the best way, for although these large migratory birds spend part of the year on the barren plains of Northern Africa, and the remainder on desolate regions here, they take very little notice of a car. We drove at random over the plain, keeping our eyes open for the birds. Now and again we found it a good plan to leave the car, then if there was a bird near, it left its eggs and ran rapidly away. If we now went back to the car we could watch it with our field-glasses, and in most instances the birds went back to their eggs, settled down, and showed us where they were concealed. Although this large plover makes no nest the two large eggs are not easy to detect owing to their resemblance to the ground. In a few instances there was a very primitive attempt at nest-building, this consisted of a hollow scraped in the ground, containing a number of very small stones, but these may have got there while the bird hollowed out the cavity with her body.

Most of the eggs on this large plain were out in the open, but we were fortunate to discover one clutch about thirty feet from a stout juniper bush. I was thus able to use this as a background for my hide. I used the tent and four sticks, rigged this up over the camera, arranged my small stool, then covered the whole with branches from the juniper bushes which were growing in profusion all around. My friends then drove off to a distance of about four hundred yards to watch the plover return to her eggs. After spending an hour in this way the bird showed no signs of returning, but immediately

the car moved on and went out of sight she came back I think she would have done this if the car had remained, for as I watched her from my hide she seemed to be spending the hour in feeding

When the Norfolk plover returned to her eggs, she did not arrive as if she was nervous, but came to them in a perfectly natural manner and settled upon them When she did this she sat with her back to the camera, as this was not a very attractive attitude I tried to make her move her position, that is, after I had made a few exposures, but although I made a few sounds that I thought would make her rise from the eggs, she seemed to settle down more securely upon them I then shouted at her, but she seemed to think the noise came from a carrion crow which was flying above her, and looking up at this intruder she called loudly I then did succeed in getting her off the eggs by banging two empty metal slides together, but when she returned, which was a few minutes later, she insisted on sitting in exactly the same position I drove her away half a dozen times, but always she settled with her back to the camera When I watched her settle, I came to the conclusion that she liked to have one large egg under each wing, and as her eggs were side by side so that I could see both, she was bound to either sit directly facing me or back to the camera The wind was blowing from her to my hide, so I was not sure whether it was this which caused her to sit facing it However, I determined to try a little experiment, and signalled to my friends to return to me On their arrival I asked them to place the eggs in such a position that one was immediately behind the other, so that from my hide there appeared to be only one in the nest About half an hour later the plover returned, looked at

her eggs as she stood over them, seemed surprised that their position was changed, then, without any further hesitation, she settled on them just as I thought she would do, with one under each wing, and I obtained the side view that I had been striving for.

When waiting in a hide with a large stretch of open country before you, the periscope is a most useful instrument. It is difficult to obtain a clear view of the surroundings from a hide covered with bushes, but by just pushing the end of the periscope through the top of your hide you obtain a perfectly distinct view of all that is going on outside. You can quickly spot your bird and tell from its behaviour if it has any intention of returning. This instrument gives such a perfectly clear view that I often use it instead of watching the actual bird. When looking at the latter through a small peep-hole, especially if your eye is a couple of feet away from the hole, it is very difficult to see when your subject is in the best position, but with the periscope you see your sitter as clearly as though there was nothing between you and it.

When photographing from a fairly low hide on the level ground it is very important to see that your focusing is correct. A few inches out either way will result in a photograph which is very unsatisfactory. A good plan is to place a piece of paper with large print on it three inches in front of the eggs, that is, if they are laid on the ground, then stop your lens down as much as the conditions of light will allow. If you are using the Dallon telephoto lens, which has a full aperture of F5·6 stopped down to F11, and you are twenty feet from your subject, with the camera at about three feet six inches above the ground, you will have a depth of twelve or fourteen

cinema camera was in position, then we built a hide of peat slabs around it. When the walls were finished and part of the roof, I got inside, while the man completed it. As the film-boxes of the camera were above my head, they partly supported the top, but I did not bargain for the weight the gillie piled above me. He finished the performance by fixing a great lump of peat and heather over two feet square on the top. When I had taken all the film that I required, I tried to move the cinema camera from the tripod to place my plate camera in position, but when I did succeed in moving it I found the whole weight of the top of the hide was being supported by my head! However, I managed to get the camera fixed and focused and exposed several plates. For over an hour I stuck my uncomfortable position, and I might have continued longer had not a hooded crow swooped down upon the eggs which the bird had left unguarded for a few minutes. To save them I gave a great shout, the owner dashed at the robber, and in the confusion the whole hide collapsed, but as the eggs were undamaged I scrambled out of the wreckage quite contented.

On another desolate moor I was trying to photograph the red-throated diver at her nest; she came, also her mate, and I secured some interesting films, but when I tried to obtain some negatives on my plates both birds swam near the nest and commenced to preen their feathers. I thought that this was a bad sign, and soon afterwards the divers came in close to the shore, waited directly under my hide with their long necks tucked into their back feathers, and showed me plainly that so long as I remained in my hide they would not go near the nest. Every now and then they lifted their heads and gave out the most unearthly cries; many birds have notes that

appeal to their listeners, others are able to utter sounds which are not too unmusical, but these two divers had the most appalling notes The love-call of this diver, and more especially that of its near relation the black-throated diver, are among the most awesome sounds it is possible to hear on the lonely moors on which they are found I have known a gillie, who was returning home alongside a desolate loch, to take to his heels, thinking that the devil himself was chasing him! From just overhead there came the most ghostly cries, one moment they were immediately above him, then over the other side of the loch, but the faster he ran, the louder the cries became After all, the diver was only announcing his arrival to the bird he wished to woo and win, and no doubt, to her, as she swam on the calm waters of the loch beneath, the notes were as sweet as ever the song of the nightingale was to the small brown mate sitting on her nest among the dead leaves on a woodland bank

## CHAPTER VI

# Photographing Birds on Cliffs

THOSE fond of climbing, combined with photography, would find the photographing of wild birds and their nests on cliffs exciting work. Some birds, such as eagles, buzzards, ravens and crows, will often construct their nests in most inaccessible spots which will tax the skill of the climber to get into position for obtaining pictures. I have, however, walked right up to the nests of all these birds without the aid of climbing or ropes, but these were in exceptionally easy situations.

I have met people who have told me that when they approach a cliff they feel that they must throw themselves over! Such persons would be of little use as assistants in helping a photographer to obtain photographs of a nest built on a steep precipice, so it is as well to choose companions on such expeditions who can be relied upon. Some years ago I was lowered over the face of a big sea cliff, and was swinging on my rope only thirty feet above the water; when I had finished my photography I signalled with my guide-rope to the man above, informing him that I was ready to be pulled up, but I received no response, so signalled again with the same result. For nearly half an hour I hung there, signalling frantically to be helped up, with the spray from the big waves drenching me, but there was no answer of any

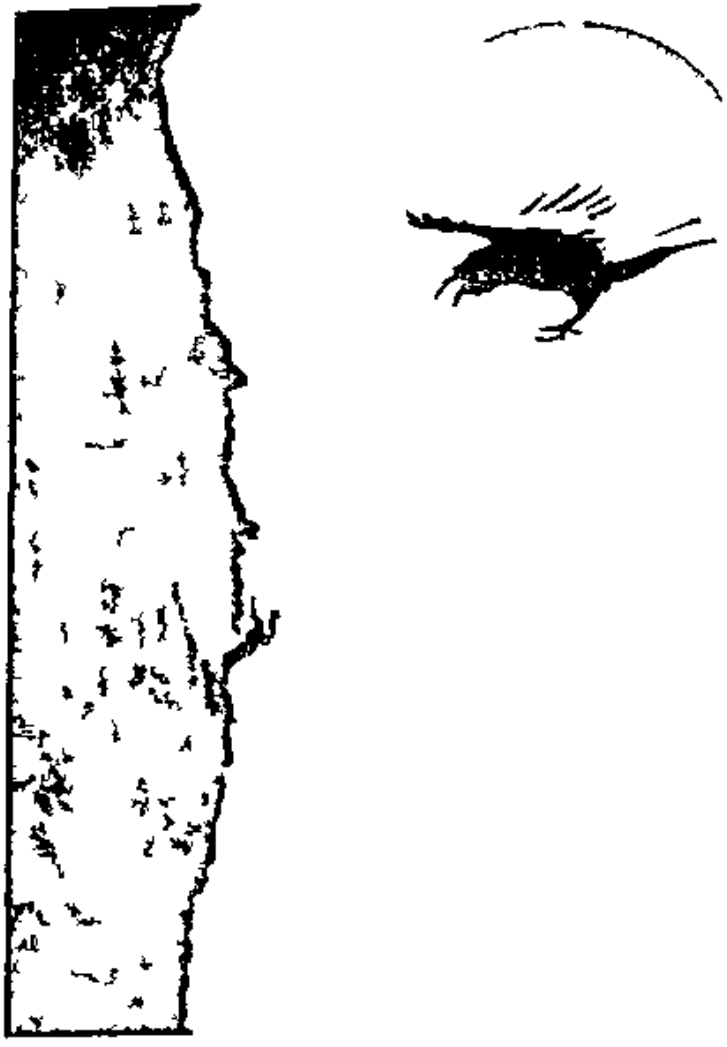
kind. It was no good shouting, for the waves of the sea drowned all other sounds, but at last I was able to signal with my arms to a companion some distance away and he came to my assistance, to find the man above quite helpless through terror, for he thought I had disappeared for good over the precipice! This incident shows how very important it is to have a man at the top of the cliff with a steady head, for the most important part of the job falls upon him.

To see cliff climbing at its best, the photographer should make a visit to the Flamborough cliffs when egg collecting is in progress. The climbers there show you how it ought to be done, and if one follows their instructions a descent and ascent are fairly easy. A lady friend of mine went over one of the steepest parts of these cliffs and thoroughly enjoyed the trip. A male friend who was also in the party thought that if one of the gentle sex could accomplish the feat, he also could, but no sooner did he begin to go over the top, to find himself dangling in space, with the sky above and the sea beneath, than he became so scared that he fainted on the ropes, and great difficulty was experienced in getting him up safely!

The finest cliff climbing I ever saw was on the island of St. Kilda; the natives, who have now deserted their lonely little isle, were the most expert cragsmen. I have seen them perform feats which, if they could be repeated on a music hall stage, would bring a fortune to the actors. Two brothers were exceptionally clever; I watched one run face downwards down the face of a cliff eight hundred feet in height, while his brother, standing at the top, allowed the rope to slip through his fingers, pulling it taut when only a few inches remained. With these two



The au ho de end ng a l ff Go ng ove the edge how ng me hod of a king ba k a d o keep body clea of l ff



A long way do n tl e cl ff

*I* Ra n attack ng tl e photographer

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men as guides I went all over the giant cliffs of that wonderful island, and had a most interesting fortnight with my camera.

The method of descending a cliff is as follows: Two ropes should be used, also a crowbar or a strong stake. The crowbar is driven into the ground a few yards from the edge of the cliff, one rope called the guide-rope is fixed securely to this by one of its ends, and the other is thrown over the cliff. The other rope is fastened securely to the climber's body and is given one turn round the crowbar. In descending you hold the guide-rope in your hands, walk backwards over the edge, while the man behind the crowbar pays out the rope attached to your body; all strain is taken off this rope owing to its being passed round the stake. Care should be taken to stand upright when going over the edge; if you attempt to go on your hands and knees you will dislodge a lot of loose earth or rocks and tear your clothes or hands rather badly. You must place all your trust in your ropes (you know they cannot break if they have been properly tested), guide yourself with the guide-rope, and also kick away any loose stones as you go down. A small stone weighing only half an ounce will give you a nasty knock if it falls fifty feet, and a larger one might prove fatal if it hits you on the head. If there is any likelihood of falling stones it is advisable to wear a protective head-covering; an old bowler hat padded with paper screwed up into tight balls makes a very good one. A code of signals should be arranged with the man at the crowbar; two pulls on the guide-rope might mean lower you still more, three could denote that you wish to ascend, and so on. But quite the best plan is to have a companion at some point on the cliff where he can see you and the man

ourselves on the sloping top. This is about a couple of acres in extent and it slopes at an angle of about thirty degrees. The whole top is covered with about three thousand gannets' nests. These large birds like to build their nests on the edge of a cliff so that if disturbed they can shuffle off, fall over the edge and get the use of their wings, for, although the gannet is a powerful flyer, it has great difficulty in rising from a level surface. But on Stac Lii every available ledge is occupied by gannets or guillemots, and as there are about three thousand pairs crowded out, they have taken possession of the sloping top.

Directly we reached the edge of the top I fixed up my cinema camera and obtained a scene that I think is unparalleled in birdland. One of the climbers advanced among the birds, then with a tremendous din the majority of those birds attempted to take to their wings. The slope, however, was not sufficient to assist them to rise, with the result that about two thousand of the great birds tumbled down, and went rolling and sliding down towards the edge of the cliff. Some went head over tail, all were flapping their wings, and I looked upon and photographed what I can only describe as an avalanche of living birds. It was a most amazing sight, and, as my camera was the first that had ever been taken to the top of this steep rock, it was interesting to obtain a living film record of it.

Later I climbed along the top edge of the precipice, attempting to photograph some gannets sitting on their nests. I was on the brink of a cliff over five hundred feet high with my cinema camera fixed up on a ledge before me; while I was manipulating this I heard a shout from one of the St. Kildans above me, who was climbing on



The author descend ng a cl ff

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the higher edge of the slope. He was about fifty yards away, and in climbing forward had accidentally dislodged a large boulder weighing several hundredweight. I saw this awful object coming direct towards me; owing to the difficulty in getting into my position, I could not leave hurriedly, and held on to my camera, seeming to be fascinated by the approaching rock. It bounced several times high in the air as it came nearer, and it seemed that I could not escape it, when it struck another rock, bounded upwards and sailed harmlessly just over my head to go crashing down into the sea far below.

If the photographer goes through a day's climbing similar to my experience on Stac Lii he is fortunate if his camera escapes damage. Even if the greatest care is taken the roughness of the journey is sure to do it a certain amount of harm. It is in getting the apparatus from the boat to the rocks and back to the boat that care should be taken. There was no landing place of any kind on the cliff sides; we had to jump from the boat to the rocks and cling on to any projecting ledge, choosing the moment when the rising and falling boat was at its nearest point to the spot we had selected. The cameras were then passed along a rope with a running noose, but they had a rough and perilous journey. The apparatus we took to the top of Stac Lii weighed about eighty pounds, and this added to the difficulties of climbing.

On another day we paid a visit to a favourite haunt of the fulmar petrel; we had to make a journey across the Bay of St. Kilda, and when we started in the morning it was a fairly calm sea. It was only on the calmest days that we could go from one island to another, for there is always a heavy swell coming in from the great Atlantic Ocean. We reached the rough spot at the cliff bottom

where our guides thought we could land, and when a favourable opportunity showed itself we jumped from the boat and clung on to the rocks; our cameras were now passed along a rope and we began the ascent. As you look at the face of this great cliff from the sea you notice that for the first three hundred feet the cliff is washed bare of all vegetation, but above this it is covered with a wealth of grass and wild flowers. The force of the waves in the winter storms, with three thousand miles of restless sea behind them, have battered against these vast cliffs with such force that the lower three hundred feet are washed smooth. This cliff, which is eight hundred feet in height, is covered with a great colony of fulmar petrels. On looking up from below we notice the grassy portion is covered with thousands of little white dots, but when we leave our boat and commence to climb upwards we find that each dot is the breast of a fulmar.

When the photographer is photographing this bird he should make for a bird sitting on her egg, and not a nest containing a young bird. The fulmar sits very closely upon her egg, but will fly from her youngster long before you get within photographic distance. If you are able to get fairly close to an adult bird you must watch your apparatus, for the fulmar has a nasty habit of defending herself by shooting from her beak a quantity of evil-smelling green oil, and if this happens to go on your camera you will have difficulty in getting rid of it, and even if you do, the unpleasant smell will remain with it for many months afterwards. The young fulmars will protect themselves in the same manner, but are not able to shoot quite so far as their parents.

The bird photographer who works among our sea-

birds on the cliffs must try to accustom himself to the terrible smell that surrounds their nests. Fulmar petrels are bad, but gannets are worse; in fact, I think if you can stand a day among gannets or cormorants you can stand almost anything in the way of an unpleasant smell. The whole part of the island of St. Kilda occupied by the natives smelt of this fulmar oil, for they used it for cooking purposes and also for burning in lamps.

Photographers who go to St. Kilda should take the greatest care; the cliff climbing there is dangerous, even when under the supervision of the natives, who know their cliffs well, but I can imagine all kinds of dangers cropping up without their aid, and now that the island is deserted it would be a very risky proposition to attempt to scale the treacherous cliffs. On Stac Lii, for instance, there is only one way up, and a winding and difficult way too. The climber might succeed in reaching the summit, but without aid it is next to impossible to negotiate a difficult corner without the assistance of a rope, and if that one track was lost sight of the climber would find it impossible to descend. It might happen that a party visited one of the adjacent islands in the morning to find landing fairly easy, only to discover that when it was time to leave in the evening a swell had come in from the Atlantic, making it impossible to get back into the boat. A party of St. Kildans were once marooned on a neighbouring island for many days. We had the greatest difficulty in getting back into our boat after our visit to the fulmar petrels. During the day a breeze sprang up, bringing with it a heavy swell, and as our boat, manned by four natives, attempted to get near enough to the cliff base there seemed danger of it being dashed against the sides. It was rising and falling a distance of twenty feet, but

the only thing to do was to take a risk and jump. The cameras were passed down safely after a risky journey (every moment I expected to see one of them hit the rocks), then with a rope tied to our waists and held by the men in the boat we waited our opportunity and jumped. Two of us managed it fairly well, but as the third member of our party took his chance he left it a moment too long, and as he jumped the boat sank quickly on the receding swell. He received a ducking and a broken rib, but we all felt lucky to get off as we did. If we had not risked it, we should have been stranded on a rocky and desolate island for three days.

The island of St. Kilda itself, however, would be well worth a visit, for on this main island many interesting birds nest. The whole place is festooned with the burrows of puffins; I have never looked upon such gigantic flocks of birds before. These little clowns of birdland seemed to be passing me in their millions, the air was darkened with them, they covered the rocks all around, there appeared to be millions as they sat in rows on the sides and ledges of the grassy slopes, while down on the sea there were thousands more. The St. Kildan wren is also fairly numerous; we often heard its loud song as we wandered on the grassy slopes. Kittiwakes, several gulls and guillemots also nest on or around the cliffs, but the most interesting bird is the fulmar petrel.

I mentioned before that the fulmar has an unpleasant smell attached to it; this permeates the nest and egg, and in fact the whole of the cliffs where the birds nest. While I was taking my photographs the two St. Kildans who were acting as my guides were climbing above me searching for more suitable nests to picture with my camera. I had slung this on my back, and was



*Top* Stac L St K da A f mou haunt of the Gannet
*B om* Gannet t ng on her ne t

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negotiating a difficult corner when I saw a fulmar leave its nest about thirty feet above; as this bird left it dislodged its egg, and I saw it coming down directly towards me. It was impossible to move quickly enough to dodge it, so I closed my eyes and held on tightly. A fresh fulmar's egg is not a pleasant object, but this one happened to be addled, and it burst within a few inches of my face! Days passed before I got rid of that unpleasant experience!

Both the Bass Rock and Ailsa Craig are good spots for the bird photographer who is fond of climbing. On two occasions I have spent several days on the Bass Rock and had a most enjoyable time with the gannets. Ropes are necessary to get down among the birds, that is, if the photographer wishes to get away from one or two easy ledges which have been photographed hundreds of times by visitors. On one visit a light-keeper from the lighthouse assisted me; he was a fine climber, and after fixing his single rope to a rock, he thought nothing of going down it hand over hand with the agility of a monkey. I did not care to let him know I was thoroughly scared as I endeavoured to follow him! I succeeded, but was thankful when my task was done. I went down this same rope on another day, spending several hours alone among the birds, and had rather an unpleasant experience. A steamer far below me came in fairly close to the cliffs, then someone on board commenced shooting at the gannets with a military rifle! I heard the bullets striking the rocks around me, and by waving my focusing cloth tried to signal to the boat, but the shooting went on for some time. I cannot understand the mentality of a "sportsman" who finds enjoyment in killing defenceless birds in this manner in the nesting season. Sir Harry

Johnston, in his book on British mammals, sums such men up in the following very appropriate manner: "They are not nearly so interesting, physically and mentally, as the creatures they destroy, and are generally, in addition, an incongruous blot on the landscape."

I have visited Ailsa Craig twice; the last time my wife accompanied me and we spent a very enjoyable week there, finding accommodation in one of the huts lent us by a quarryman. The gannets on Ailsa are not so easy to get to as on the Bass Rock, but there are more of them. It is a wonderful sight to stand on one of the ledges several hundred feet up the great cliffs and watch the gannets all around. They cover the cliffs above and beneath us, but perhaps the most interesting thing is to look upon the vast flocks flying before us and far out to sea. At first glance they all appear to be flying in great circles; if we watch an individual bird we see the reason for this A gannet tries to land on the cliff against the wind, but it happens in a great many instances that when it attempts the actual landing it misses its foothold and has to circle far out to sea to come up against the wind once more. Some birds made several attempts before succeeding.

My wife is the only woman who has succeeded in scaling the steep sides of Ailsa. With the assistance of a rope attached to her body we helped her up for a distance of three hundred feet, then feeling that she could not go higher, we left her on a comfortable little ledge while we searched for other birds to photograph. After we left her she felt that she could never undertake the descent, and deciding that if this very wonderful view before her was the last she would ever look upon, it would be as well to view it in comfort. The ledge was hard, so she

selected a gannet's nest as being more comfortable, and from here gazed upon the distant peaks of Arran bathed in a blue haze. Her thoughts were far away as she drank in all the beauty of the Scottish hills, when suddenly a great bird landed within a couple of feet of her. The gannet which had returned to its nest gave one tremendous "squawk" and fell backwards from the ledge! It would be impossible to say who was the most startled! My wife joined in the cry given by the gannet, thinking her last moment had come, but what must have been the feeling of the bird, when it landed to find a human being actually sitting on her home?

Building a hide on a cliff is not an easy task. All the material for covering it must be carried to the spot, and it is a tiring undertaking to climb with it on your back. Before I obtained films of the golden eagle I had to carry branches for camouflaging the hide a distance of four miles, but if I had known, I need not have gone to all this trouble, for the eagle is a bird which will return to her eyrie with a very rough hide before it. The nest was in rather a breezy spot on the cliff side, and most of the branches blew away, leaving my tent flapping in the wind, but before I had spent one hour inside, the two great birds returned, one carrying a mountain hare in its talons. Within a few minutes I had obtained two hundred feet of cinema film of the birds at their eyrie. After all the trouble I took it was satisfactory to know that my camera had obtained the first living record of the king of birdland. Others who have photographed this magnificent bird have found that a tent without any covering is quite sufficient. The buzzard, on the other hand, is a most suspicious bird, and will not return to its young unless the hide is very well concealed. I have

often thought that the buzzard must have a strong sense of smell, for I have left my hide in position for several days, entered it while the bird was miles away, but directly it got near it has refused to go anywhere near the nest. This difficulty can, however, be got over by spraying the hide with oil of aniseed at the time of making it, placing more on just before you enter; this very effectively "kills" the human scent. Experiments made in America have proved that the buzzard discovers a lot of its food by scent. Before I tried this plan I spent a whole day in a hide on a cliff side waiting for a buzzard to return to its young. The bird in the nest had plenty of food to get on with during the whole of that time, for in the early morning one of the parents had given it a young rabbit. At six o'clock in the evening I crept out of my hide not having exposed a plate. I then thought that perhaps the best time to take photographs would be in the early morning, so I went the three miles back to the small inn where I was staying, had a good meal, and at ten o'clock at night went back once more to my hide. I was able to get in without disturbing the buzzard, and waited expectantly for the morning. It seemed one of the longest nights I ever spent, for I was sitting on a narrow ledge, and had to keep awake for fear of falling off. At last dawn arrived, but long before it was light enough to expose a plate the buzzard left her eyrie, flew out over the moors, to return a few minutes later with a frog in her talons. The whole of this was given to the youngster, and as it was not much larger than the frog it had sufficient food to last it for a long time! It was still not light enough for photography, and I had to sit and watch my bird as it attended to the wants of its baby. Soon afterwards the mother buzzard flew to a rock just



Raven s Nest
*In et* Raven

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above and behind my hide, and at intervals of a few minutes uttered her mewing cry. I waited on until nine o'clock in the morning, then, tired and disappointed, left my hide. A better knowledge of the habits of the bird would have saved me a lot of trouble, which proves that those photographers who make a careful study of the ways of the wild creatures will have far more success than those who simply try for photographs.

I had better success at another nest of the buzzard which was discovered in a neighbouring dingle. Here we fixed up my bird-tent hide and covered it with branches cut from bushes in a neighbouring wood; we then left it for a couple of days, and when I eventually entered I had a very short wait before the hen buzzard returned to brood upon her one small nestling. During the day the male paid several visits to the nest, but in the afternoon the hen became restless, and left her nest to sit on a branch a few yards to the right; here she settled down to preen her plumage, and I have mentioned elsewhere that when a bird does that she has given up every intention of again going to the nest while you are in the hide. I watched her for an hour, then, not wanting to keep her away from her youngster, I packed up and left.

## CHAPTER VII

# Photographing Birds on the Marshes

MANY of our most interesting birds build their nests on the margins of lakes, where they find good shelter among the tall reeds and sedges At first it looks rather an imposing task to wade out in muddy water up to your waist, build a hide, and expect to obtain photographs of your subjects, but the photographer will find that in such places photography is not difficult owing to the ease of constructing a hide to harmonise with the surroundings I have used many kinds of hides in such places, but I have found quite the best to be one of hurdles covered with dead reed stems A fairly light wood framework can be made, a layer of long dried reed stems placed on this, then if two wood slats are fixed over the reeds, corresponding in position to the top and bottom bars of the frame, they can be wired to the latter, and a screen of reeds is quickly made If the water in which we are working is three feet in depth, it is necessary to drive stakes in to support the reed screen Three of these hurdles should be used, placed in the form of a triangle Thus placed, they make a very roomy and comfortable shelter for the photographer

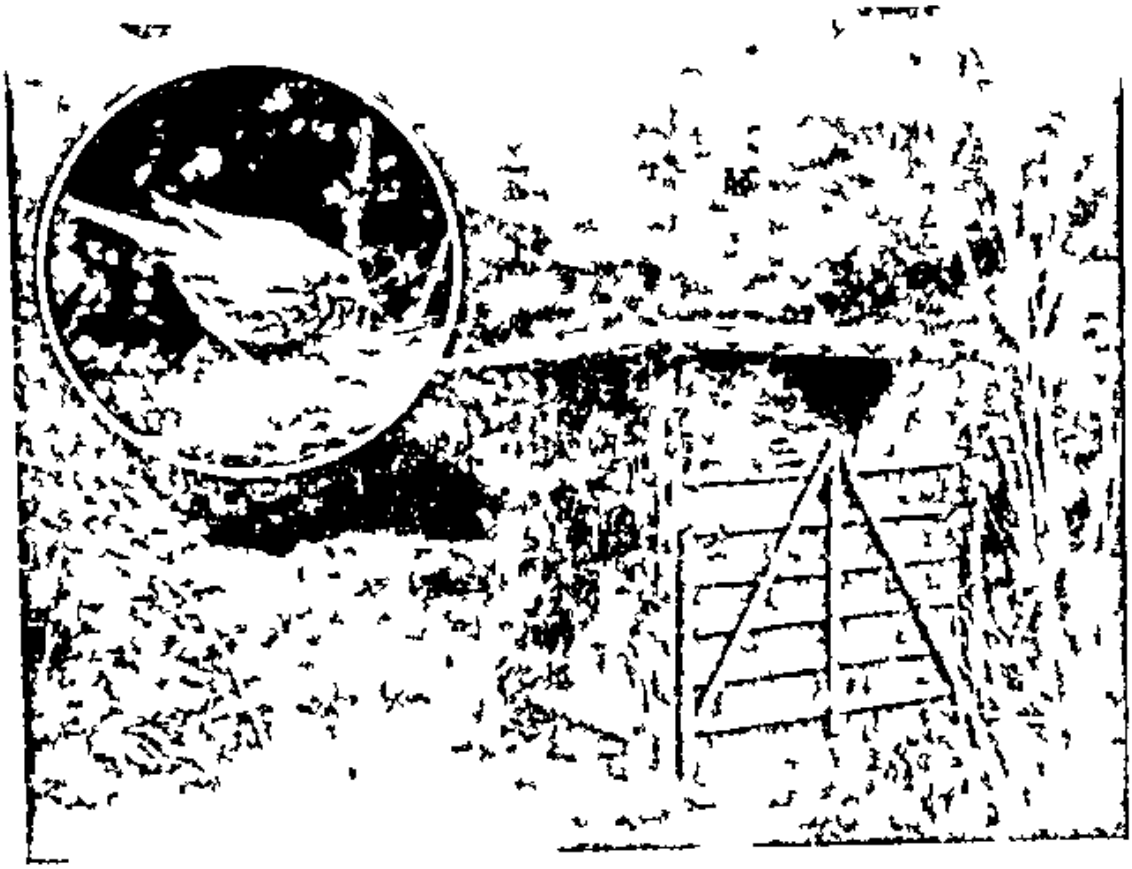
It is not often that a hide is wanted in water as deep

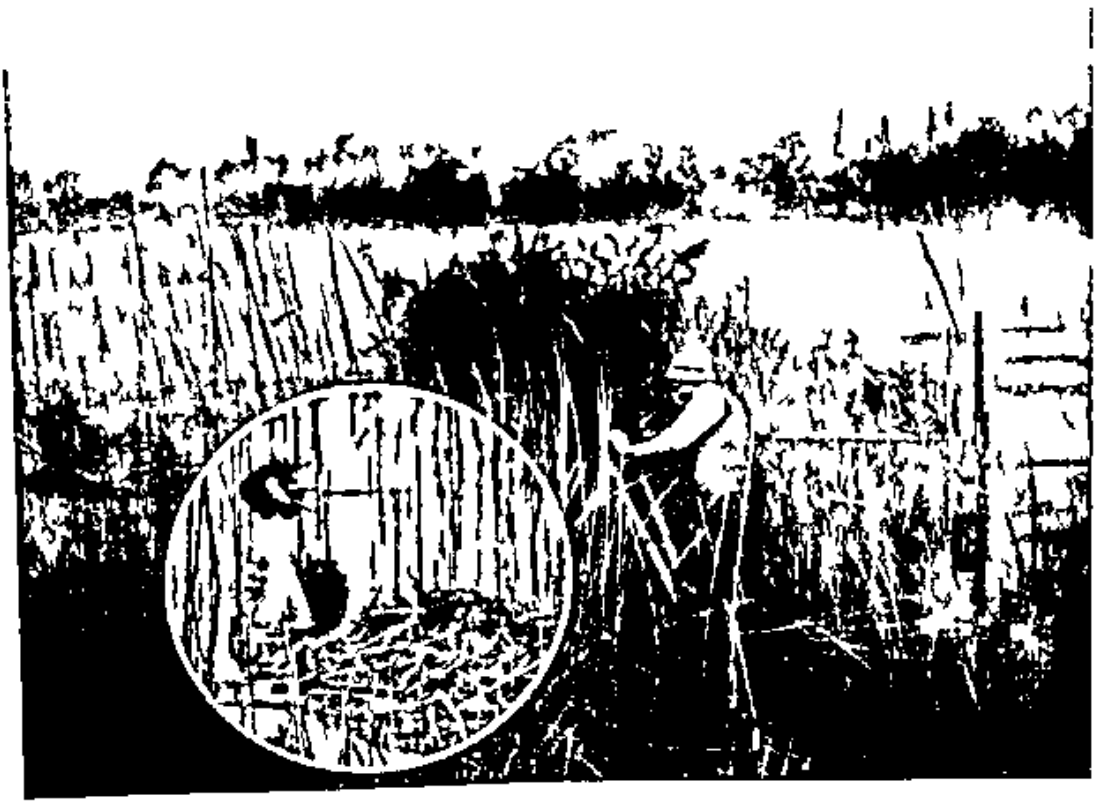
as three feet. Usually the photographer is standing in mud on the margin of the lake or in water only a few inches in depth. Under such conditions a hide of this description is the best to use, for the outside showing nothing but dead reeds harmonises so much with the surroundings that I find birds take no notice of it. I have used this hide fixed on the end of a flat punt, and as there is plenty of room inside for a cinema camera and plate camera to be used side by side, in addition to a chair for the worker, no more comfortable hide could be desired. I have spent hundreds of hours in hides made in this manner, and obtained many of my best photographs from them.

When photographing water-birds, such as the great-crested grebe, it is not necessary to have a roof to the hide, for these birds seldom leave the water to fly. In very hot weather it is advisable to place a piece of canvas over the top to shelter the photographer, but at other times the open top is very welcome. Some hides become very hot and stuffy, especially on close days, but I always prefer to work with an open top if possible. The periscope comes in very handy on such occasions, for it is so slender that it can be raised above the top of the hide without alarming any wild creature, and a clear view of all that is happening outside is obtained. It is sometimes very aggravating when tucked away in a cramped hide to hear your bird, or what you think is the bird you are expecting, just outside, and yet not be able to see it; the periscope does away with this annoyance, for if your subject comes anywhere near, you can see it as easily as if you were out in the open.

The only thing against such a hide is that it is rather cumbersome, but when you are doing a lot of work on

one estate it is usually possible to obtain assistance to carry it from one spot to another. If you should be photographing on public property, such a large hide is likely to draw attention to your work, but I have found that if you take the boys of the neighbourhood into your confidence, show them what you are doing, and explain the interest of the work to them, instead of being a hindrance, they will become a help. On one occasion I was using such a hide on a private estate, but a public path ran through this, and from it my hide was rather a conspicuous object, for it was higher than the reed-bed in which it was placed. My apparatus was fixed to the end of a punt, the hide placed round it, and was well above the water. The natives knew all about it, but it happened that I was photographing a rare bird which had not previously been reported as nesting in England. Egg collectors from all parts had been to that spot hoping to obtain the eggs. But they found the place so well guarded by game-keepers that it was quite impossible to search. I found that one man was watching my movements, hoping to find the nest in that way. I was unaware of this at the time, otherwise I should not have left my hide in position, but I did so over a week-end. On the Sunday afternoon, this collector with two companions made a raid on the nest. They waded through a large reed-bed, using my hide as the landmark to make for, and after a very strenuous time reached the punt in a thoroughly exhausted condition. One of the game-keepers saw them in the punt and thought it was me with two friends, so took little notice. When these men reached the punt they were in a great hurry; they looked over the side and saw a dabchick's nest containing five eggs, and, thinking these were the eggs of the rare grebe they were





*Top* A hide constructed of hurdles covered with reeds

*Inset* Song Thrush at nest

*Bottom* The authors working in a hide made of hurdles fixed in the water near the margin of a lake the nest of the grebe is seen on the extreme left

*Inset* Great crested Grebe

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after, quickly confiscated them and retreated. The nest of the black-necked grebe contained three eggs only, and was at the end of the punt; this they missed completely, and it was fortunate that they did so, for if those eggs had been taken a fine series of photographs of the nesting habits of the black-necked grebe would never have been obtained. After that the nest was watched night and day, and the young eventually left their nest and remained on the lake until the autumn with their parents.

I have on several occasions had to take photographs of water-birds at their nest built on the outer margins of the reeds. The reed-bed in each instance has been a deep one, and the edge where the nests were built was deep water. A punt could not be obtained, and a small boat was hardly steady enough for a cinema camera, for the slightest vibration or up-and-down movement is enlarged many times when shown on the screen. I have, however, made a very satisfactory hide by driving four posts into the mud beneath the water, so that their tops were about six inches above the surface. Four strong pieces of wood were fastened to these and boards placed across. In this way a strong platform was made, and it was an easy task to fix four hurdles stuffed with reeds on the sides. A roomy and very comfortable hide was thus made.

I spent a whole night in one such hide, and had a most interesting experience. It was built on a large lake close to a small island on which many species of birds were occasionally seen to land. Over the top of the shelter I placed a large piece of dull green canvas. I was able to see through this, as it had a coarse mesh, but any bird settling actually on the hide could not see me. During the first part of the night I slept soundly, but just before

daybreak I was awakened by a shuffling noise above, and on looking up saw through my canvas screen three herons preening their feathers. They remained there a long time, then flew off across the lake. On peering through a small peep-hole I saw on the island a number of ducks, all appearing to be fast asleep, for their beaks were tucked round on to their backs, and they were quite oblivious of all that was going on around. Among the group of birds before me I saw one or two mallards, half a dozen pochards and several tufted ducks, also a moor-hen and coot. At four o'clock I took a length of cinema film of the birds, and more strips as they awakened, up to six o'clock. At the latter hour they strolled off towards the water. In a short time I had succeeded in obtaining photographs of six species of birds and saw many more.

If the photographer has to work in a reed-bed where the water is two or three feet in depth, and he is not able to take advantage of any of the hides described, it is a good plan to fall back upon the canvas cloth. First fix up the camera, then place four stout sticks or small poles in the water, so that their tops are about a foot above the camera, fixing two level with the front of the apparatus, the other two a yard or four feet behind; place them in the form of a square and throw the canvas cloth over the whole; if another post is now fixed somewhere near the centre a very satisfactory hide is made which can be covered with a few reeds or branches. To make it more secure it is a good plan to fasten a rope to the tops of the four posts, thus preventing the sides from sagging. Movements of the sides can be obviated by tying a few large stones at intervals along the edges of the cloth.

I do not advise anyone, however strong he may be, to attempt to wait in such a hide without satisfactory waders.



Black necked Grebe



Great crested Grebe

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Some young nature photographers become so enthusiastic over their task that they think no hardship is too severe providing they obtain their photographs. Such foolish actions may appear to do no harm at the time, but the photographer will suffer for it later on. Don't attempt to make a martyr of yourself when taking your subjects. I have always made it a rule to make myself as comfortable as possible under the circumstances, and I advise everyone to follow my example. It is not fun to remain long periods in a hide in such a cramped position that you suffer pain; if you are thinking of your bodily ills all the time, and wondering how you can obtain comfort, you cannot concentrate on your subject. There are times when the photographer must suffer a certain amount of discomfort, but a lot of this can be overcome by building a thoroughly good hide in the first place.

Before building a hide in any situation the photographer should look round to discover the best point of view for the photograph. Don't place it in such a position that the light is in the right direction at the time of building; remember that you may have to wait several hours, and by the time your subject is likely to arrive the sun will be in a different position. A fairly safe plan is to make your hide on the south-west of your subject if conditions will allow. There are, however, some birds which make attractive pictures if you can take them against the light; the lapwing is one of these, and if you can get your bird between yourself and the sun in the morning or evening you are sure to obtain some picturesque results. Modern plates have made photography possible at such times. The "Imperial Eclipse Ortho" is a plate which appears to be more sensitive in the morning and evening when the light from the sun

is yellow. I have made exposures at 1/1000 second on birds in flight at seven p.m. in August with this plate and obtained perfect results.

The most successful bird photographers are those who make a study of their subjects before commencing to take photographs. It is not waste of time to watch your bird for several hours with a pair of binoculars, for if you do this you will discover many things which may help you. Some water-birds have certain tracks through the reeds to their nest; if you build your hide in such a position that this pathway is blocked you may have a fruitless wait. I know one very successful nature photographer who thinks nothing of spending two or three days in watching the habits of his subject before he commences to build his hide or make an exposure.

Water-birds are, as a rule, rather shy, and care should be taken in building the hide. A prominent object which appears suddenly only a few feet from a nest will often make a bird desert its eggs. If it is possible, it is a good plan to first fix the hide forty feet or so from the nest, and move it nearer by degrees. I have overcome the shyness of some of the most difficult subjects by doing this. One great-crested grebe that I wanted to photograph was most obstinate. It would come to within a couple of feet of the nest, then turn round to disappear in the reeds. It was not my intention to keep the bird off its eggs for more than two hours, for if a bird does not return in that time it is a sure sign that there is something very wrong with the hide, and the photographer should retire or find out what is wrong. I was using my cinema camera at the time, and was just about to give up when one of those little incidents happened that the cinema worker is always praying for, but which seldom takes



Kingfisher with its prey
*Inset* Kingfisher in flight

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place. A coot swam up to the nest and was just commencing to remove the covering of the eggs when a second coot arrived and challenged the bird on the nest. The great-crested grebe usually covers its eggs when leaving her nest, and some coots which are confirmed egg thieves have discovered this form of camouflage, and will often remove the covering and devour the eggs. I have seen this happen on more than one occasion. While the second bird was attempting to jump on to the nest three other coots arrived and a fight took place. The bird on the nest held the fort for a time, but was at last driven off, and another took her place. Now all four birds on the water attacked, and in the general *mêlée* the nest was damaged and the eggs broken, but I obtained a wonderful film record of the battle.

It is surprising how quickly a wild and very shy bird will get used to a hide and the photographer. I found a nest of the great-crested grebe about fifty feet from the margin of a lake; I built my hide in the water thirty feet from it. The hide consisted of my three hurdles placed in a triangle with no top, and in here I spent several hours for four days in succession. On the first the bird was shy, and I had to wait nearly two hours before she returned. The second day she was back in under the hour, and on my third attempt she returned almost at once. On my fourth visit she did not trouble to move from her eggs, so I tried the experiment of stalking her. Holding my "Birdland" camera in front of me, I went forward slowly in the water, and by taking care was able to get to within ten feet of the nest before the bird left; then, instead of jumping up and covering her eggs, she just slipped off and swam about the other side of her home.

The nature photographer often comes across instances where it seems possible to stalk a bird or mammal in this manner. The secret of success is to make no sudden movements, to move very slowly, and to remain perfectly still if the creature makes the slightest sign of moving. You keep motionless until the animal settles down, then go forward very slowly again. I have stalked many wild creatures by following this plan, and it is surprising what the photographer can accomplish with care. Of course, the camera should be prepared beforehand, the shutter set, and the plate in position. For this work a camera which has all its movements at the back, such as changing the plate or film and setting the shutter, has a great advantage over one which must be worked from the front. I have known a photographer to stalk right up to a sitting curlew by advancing in this manner; those who know the habits of this bird, which is such a shy and wary creature, will appreciate the feat.

## CHAPTER VIII

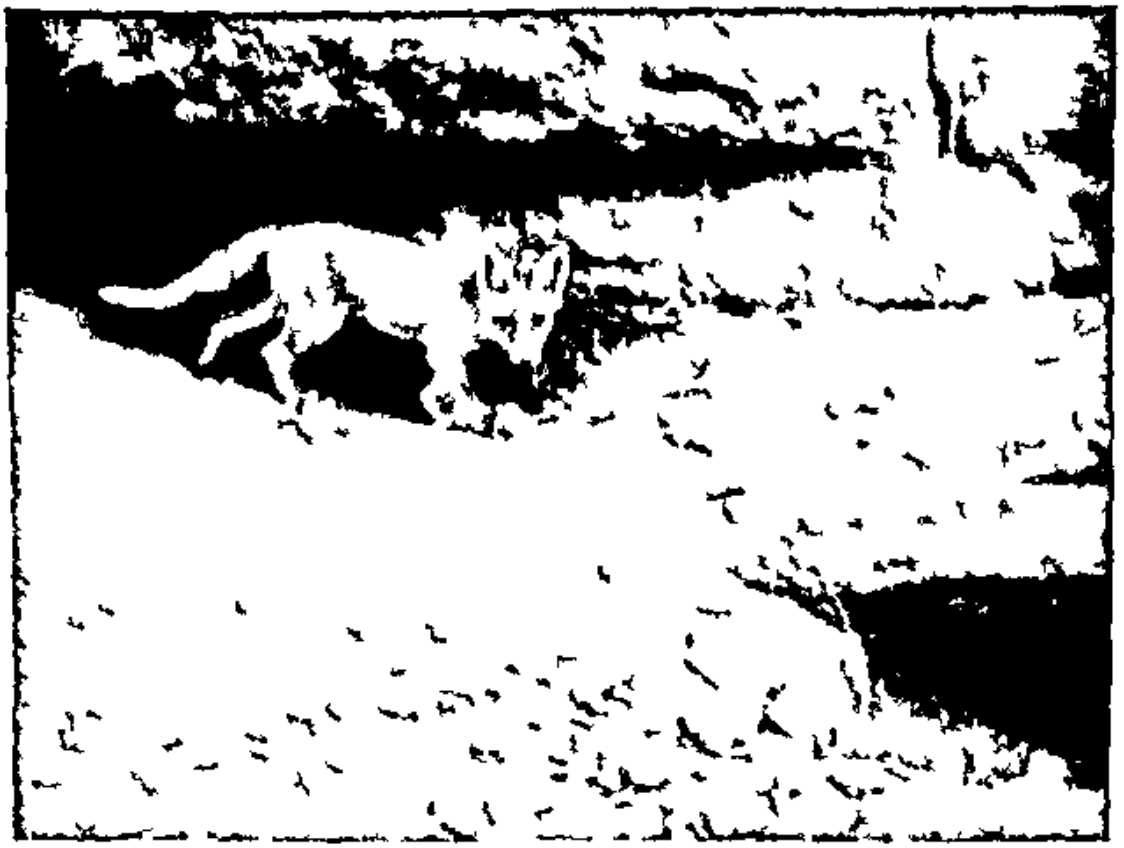
# Photographing Mammals

THE photographer who has been successful in obtaining pictures of wild birds and insects will find when he turns his attention to our British wild mammals, that he is up against a much more difficult task. They are not scattered over the countryside so freely as the birds, and they are far more wary in their habits and difficult to approach. Added to this, the scent of most of our mammals is something quite beyond our understanding, and they are able to detect with their noses the presence of a human being when he is fifty yards or more away. This sense of smell is, perhaps, best developed in the fox; his whole life is guided by his nose, and he can easily detect a man at a distance of one hundred yards if the wind is blowing towards him. The photographer will therefore realise that the difficulties to be overcome are immense, and that he is pitting his wits against a creature which has inherited cunning from generations of clever ancestors. How often does the visitor to the country see a fox or a badger? Yet in some districts they are as common as some of the birds which are frequently met with. A fox has its lair less than two hundred yards from my home, and, although this haunt has been occupied for many years past, I seldom see its owner.

If a fox's earth is found in a spot convenient for

photography the greatest care must be taken in building a hide. If a prominent object was erected thirty or forty feet from the lair it is probable that Reynard would leave it the following night. The best plan is to place a few branches on the site chosen and add to these by degrees, then, when you have a sufficient pile, to build your hide in the same spot, being careful to camouflage it with the same branches. The early morning or evening is the most likely time to obtain a snap of the fox as it enters or leaves its home, but a day must be chosen when the wind is blowing from the earth to your place of concealment. In the early summer months good photographs may be obtained of fox cubs at the entrance to their earth; on sunny days they may appear at any time, but the morning and evening are likely to provide the best pictures. At such times the light is not too strong, but modern inventions have made photography possible even soon after sunrise or just before sunset. Those ultra-rapid orthochromatic plates, the Imperial Eclipse Ortho 850 H. and D., should be used, and a lens working with an aperture of F6, or even larger if good depth of definition can be obtained in the site selected. These plates are very sensitive to yellow light, and, as the rays from the sun contain a lot of this colour at these times, it will be found that they are sometimes more sensitive than in the height of the day when the light is the most brilliant.

If the photographer is fortunate to find a lair where it is possible to photograph fox cubs at play he should obtain some delightful photographs, and also have a most entertaining time in his hide, for there are few better sights to be seen in the countryside than a family of little foxes enjoying their evening frolic. If the mother



Fox retu n ng to ts la n tl e ea y mo n ng

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also leaves her lair the enjoyment is increased, for she shows so plainly that, although she is a careful parent, always on the alert for danger, she will sometimes unbend so far as to let her cubs take liberties with her, but if they go too far she will administer punishment which, for a short time only, seems to damp their enthusiasm. A favourite game seems to be "follow the leader"; one cub dashes round in every direction followed by its companions; now and again it allows itself to be caught, then a rough and tumble game takes place as the whole family roll over in a confused heap. You will sometimes notice that while the mother is on guard she repeatedly lifts her nose and, with a short jerky movement, draws the nostrils back. On the slightest sign of a scent that may denote an enemy she gives a warning, and the whole family seem to sink into the earth, so swiftly and silently do they depart. I have often noticed that the little wild creatures never fail to obey a warning; their world is a world of enemies, and if they took no notice of the danger signals given by their elders they would not live long. The school of the wilds is a strict one, and only those survive the course of lessons which obey every command of their teachers.

A few years ago a pair of fox cubs took up their abode in our garden. We were surprised to see one summer morning nearly a cartload of sand scratched out of a sandy bank, and I knew that only a fox could have performed this feat in a single night. Careful watch was kept, and each evening at about eight o'clock we saw the two nearly full-grown cubs leave their home to go out into the fields for a night's hunting. They usually returned between seven and eight o'clock in the morning. We noticed that they always left together and returned

side by side, which looked as if this devoted pair hunted together and shared their spoils They remained with us for nearly two months, and during that time we tried the experiment of taming them Food was placed outside their earth each evening, and whenever this was done we called their names, for my children christened them Billie and Jack Billie became quite tame and would even take food from my hand My spaniel dog, Cherry, who is the most gentle dog I have ever known, actually made friends with them, and on one occasion we saw this pretty trio playing together One excited cub had hold of one of his long, shaggy ears, while the other was trying to grasp his tail, which was, as usual, wagging frantically Cherry thought them delightful playthings, and was always only too pleased to meet them We once saw this dog with excitement shown in every movement, he came to us with a tiny tail projecting from his mouth, and on our telling him to show us what he had found, he placed a live and perfectly unharmed field mouse at our feet ! This shows what a gentle nature he possesses Everyone who has made his acquaintance loves him, he will make friends with tramps, burglars or parsons, they are all the same to him !

The little red squirrel makes a good subject for the nature photographer, but there are not a great many woods where he may be found, owing to the introduction of the grey squirrel This latter animal is an enemy of all wild life smaller than itself, and I am sorry that it ever found its way into our woods In the spring and early summer months it does a lot of harm to our birds, taking their eggs and young, and in most of the woods in South and Central England it has almost exterminated our native red squirrel If the photographer

lives near a wood in which squirrels are found, either the red or grey species, it is possible to attract them to the camera by placing a supply of nuts in a suitable spot. The hide should first be constructed, and left there for several days, then each morning at a certain time a supply of nuts should be placed on the spot where the photograph is to be obtained. An old stump or part of a fallen tree is a good place to select, but it should be where a good light falls upon it, for it may be necessary to give a rapid exposure. It may also be necessary to use aniseed on the hide to overpower the human scent; this is a fact that can be ascertained when the photographer attempts his work. If once the bait is taken, and repeated several days in succession, it is a sure sign that if the photographer is careful he will obtain an interesting snap of some wild creature.

The water vole is an animal which it is fairly easy to obtain pictures of. The haunts can be ascertained by watching the banks of the brook or lake. This pretty beaver-like mammal will often build little platforms on branches which touch the water, or in other similar spots, which it uses as stations on which to rest or feed; if one of these can be discovered with fairly fresh material on it, the photographer should concentrate upon it for a few hours. The morning and late afternoon are the most likely times to see the vole. Sometimes the photographer may come across one sitting by the stream side enjoying its meal; it is often possible to obtain a photograph by making a noise. This sounds rather remarkable, but the water vole seems to be paralysed by any sudden commotion. I once saw one on a little promontory, so while I was preparing my camera I shouted as loudly as I could, and made all the movement possible I

The vole sat perfectly still while I was behaving in this mad manner, and I was able to obtain the photograph that I wanted. In the early days of nature photography I was often thought to be suffering from a mild form of madness by the natives of the district in which I lived, but if one of them had watched me dancing on the edge of a stream and shouting my loudest while fitting up a camera he would have thought that it was quite time I was taken care of!

If we think a moment of the secretive habits of most of our small mammals, such as the shrews, mice, weasels, etc., we shall realise what a difficult task it would be to attempt to photograph them in their native haunts. Very few photographers have succeeded, and it is hardly worth the time involved. Quite the best plan is to capture your animal and photograph it in captivity in suitable surroundings. The pioneer of this work was Douglas English, and in his fascinating book, "Wee Tim'rous Beasties," we will find many splendid examples of this kind of photography.

For this work an excellent way to proceed is to make a long box. This should be about four feet wide, three feet high, and anything up to twelve feet in length. For convenience it should stand on four legs to make it a convenient height for photography. At one end there should be a small opening for your lens to point through. The other end has glass on its top and two sides for a distance of about four feet. The top should be removable, so that scenery may be fitted up inside. Your animal is then placed in this cage and suitable food put where you want it, but even in a confined place like this the photographer will find that he will have to exercise quite as much patience as though he was actually photographing



*T p* Do mou

*B m* Rabb h d n n g

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in the wilds. It is important to have such a cage in a place free from all noise, otherwise you may wait in vain for your shy subject to come to the site you have focused.

Many of our mammals come out only at night, and with these flashlight must be used. The usual flashlight apparatus makes a clicking noise when the flash is fired; this would be fatal as far as a successful photograph is concerned, but if it is fired electrically this difficulty can be overcome. Anyone with a slight knowledge of electricity and a small battery should be able to arrange the wires to fire the charge of magnesium powder.

If the nature photographer is what he should be—that is, a good naturalist—he should be able to obtain photographs of most of our larger mammals in their native haunts. Their lairs must first be found, and by careful watching their times of leaving or returning can be discovered. The otter will often show itself on a favourite rock, and the badger will have fixed times for leaving its deep underground home. The latter, however, is not often seen in the daytime, but if all the apparatus is fixed up then, a flashlight photograph can be obtained at night.

Electricity used in conjunction with the camera opens up a wide field for the nature photographer, especially when photographing our mammals. If their runs are discovered, a certain spot in these may be focused, and by placing a thin silk thread in the animal's track, and having this connected with an electric release on the camera, and a charge of flash powder, the animals themselves make the exposures. The method I have followed has been as follows: the electric release is fitted to a shutter which has a "time" release. When this is operated by a small electro-magnet the shutter opens and

remains so for three or four seconds A wire also passes through the magnesium powder, and at the point covered by the powder a piece of thin fuse wire is fixed The same current which opens the shutter fires the fuse about a second after the shutter is opened, and when the exposure is made the shutter closes, preventing the plate being fogged if the camera is left standing for any length of time A small accumulator is better than a dry battery for this work, for with the former you are sure of your charge of powder firing You know when your exposure has been made, even if you are a long distance from the camera, for the flash made by the powder lights up the whole countryside This work is rather exciting, for it is not until your plate is developed that you know what success you have had Sometimes you draw a blank, while at other times a fine photograph repays you for all your trouble I have had quite as many failures as successes, several times my plate has been exposed by cattle, and once I obtained a photograph of the legs of a poacher as he passed through the wood at night

Rather fine photographs of stags may be obtained in some of our public parks, if attractive pictures are secured they often obtain good fees from our illustrated periodicals Richmond Park is one of the best in the country for deer stalking with a camera, and autumn is perhaps the best time Owing to the animals seeing large numbers of visitors they are accustomed to them, and a near approach is possible, although it is not advisable to get too near a couple of red deer which are fighting for their mates

Owing to the colour of the deer resembling the autumn tints of the trees, rapid panchromatic plates should be used and a light colour filter fitted to the lens The



Water Vole



Otter coming up after a dive.

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Imperial Eclipse Ortho plates will, however, give excellent renderings of the animals, especially in an evening or morning light. The greatest care must be taken in stalking the deer, for although they are tame and used to seeing people pass close to them, they are inclined to bolt if any sudden movement is made. A reflex camera is useful, as the creatures may be focused as they move, but if the photographer has a focusing mount fitted to his lens, and is a good judge of distances, the direct vision finder is the quickest and best to use.

Deer stalking with a camera in the Highlands of Scotland is a task so difficult that it is hardly worth the trouble involved. However, good pictures of the wild deer may sometimes be obtained with the aid of a friendly stalker. At certain times of the year the deer will come down to the lower country, and they will take the food placed out for them. There was one little spot on one of the islands of the Outer Hebrides where I often saw the red deer feeding, and the head-keeper told me that it would be quite possible to obtain photographs of them. On that visit I was pressed for time, and every available minute was taken up with bird photography.

The experienced deer-stalker could probably help the photographer to obtain photographs, but it would be more difficult than shooting them with a rifle, for even with the aid of a telephoto lens the stalker would have to get closer to his quarry. A stalker in the wildest part of the Highlands offered to assist me in this rather exciting work, but I was not able to avail myself of his offer at the right time.

This stalker was one of the finest naturalists I have met in Scotland; he could entertain you the whole day through with fascinating experiences he had gone through

record with his camera. I make it a rule to carry a camera with me whenever possible. Most of my travelling is done with a car, and it is easy to keep my folding press camera close at hand. On one trip I was fortunate to obtain a quick snapshot of an otter as it showed its head above the water, and that photograph brought me in fees amounting to six guineas. We might look upon the woods and fields as a great stage on which there are daily acted wonderful dramas. All the actors are in deadly earnest, for if they fail in their parts they die. Only those which keep all their wits about them survive in the great struggle for existence.

I quote the following from my book, "The Great Winding Road," which gives a glimpse of what the observant naturalist may see on his rambles: "We were travelling through an avenue of gold. The trees by the winding road were made wonderful with the fairy brush of that wizard, autumn. Golden tints ran riot with russet brown, while a dozen tones of red and green intermixed made a blaze of colour that made you long to stop your car, to try to grasp something of the amazing beauty of it all. It was as though the spirits of spring and summer had joined hands with their sister autumn, and together they had painted a picture in this corner of Hampshire for man to feast his eyes upon. Between the trees, or rather just beyond them, you caught glimpses of purple moors, a glory stretching before you, that made this wonderful scene complete.

"I have seen most English counties in the fall of the year, but if there is a more beautiful spot at that time than the New Forest I have yet to see it. If visitors to our Islands wish to see what this country of ours can show, they should travel north from Bournemouth to

Winchester on a sunny autumn day. They will look upon a picture so wonderful that no matter where they wander in the world, it will stand out supreme as a masterpiece in Nature's gallery.

"There was one spot so filled to overflowing with beauty, that we had to draw up, park the car on the greensward, and wander into the trees. There we sat down, had our lunch, and rested awhile, then went still farther into this forest of gold, and almost every step we took showed us beauty surpassing beauty, until the maze of colour seemed too great to drink in. What a contrast to the spring, when these same glades were filled with song. Now there is silence everywhere, for birds do not sing to a dying season. It is when the world is young that they open their hearts, but to-day it is as though Nature was making up for the loss of music by presenting us with a picture that would be spoilt by anything but quietude.

"But suddenly this autumn silence was rudely broken. We were watching a squirrel sitting on a branch of a great oak, enjoying an acorn that he had just collected. Into the arena beneath two angry stags trotted, followed by two does. The larger of the two animals lifted his nose and sniffed, and the does looked expectantly at their leader.

"Here before us was a great stage; it was carpeted with green, and backed with a setting of red and gold, while through the still leaves ringlets of sunshine penetrated to settle on the ground, or fall upon the fine animals before us. The audience was not large, just two people unseen by the stags, and one small brown squirrel. The latter paused in his meal, and joined us in looking upon the play about to commence.



Badger



Red Squ rel

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"Lowering his head, the larger of the two animals ran out into the centre of the opening; he had challenged the monarch of the herd, as many a youngster had no doubt done before, and standing firmly, with front feet fixed in the ground, and with head lowered, he waited for the attack. The does were looking on anxiously at the two champions, and their big eyes were full of wonder. The eager young fighter tired of doing nothing and attempted to alter his position. The next second the monarch charged him.

"For an instant he is stunned by the blow and staggers back, but disentangling his horns he springs aside, and with great power dashes in to meet his opponent. Their horns are locked, and with lowered heads they push hard, slowly working their bodies round. Crash follows crash as their great horns meet. One stag is forced to his knees, but he slips his horns, springs up, and in so doing gives a strong side blow as the other, losing his balance, stumbles past him.

"Again the stags are locked in a tight embrace, and they rear up on their hind legs. When one manages to free his horns, both use their front feet, punching with these like human boxers. The monarch then awaits his opportunity, and while the other is sparring at him, he suddenly jumps up, lowers his head, and rushes in under the raised hoofs.

"His antagonist is knocked over, and a wound is seen. But the pain only goads him on, and before the other can return to the attack he charges in and meets him on his side. With a deadly thud both roll over and struggle and kick while down. Some more deer come up the grassy slope to join their companions. The fighters jump up, and again stand facing one another at a distance

of half a dozen yards. The excited does are standing in a group. They start with frightened gestures on the crash of those horns, for again the fighters meet. The larger stag is forced back, and the attacker follows up the charge with a swinging side blow with his horns.

"The other seems almost stunned. Leaping clear, the youngster runs round, and before the other has recovered from the shock, he is charged powerfully on the other side, and sent rolling on to his back. But the old stag is not vanquished. He struggles to his feet, lowers his head, and pretends that he is going to receive the charge that follows. At the critical moment, however, he springs aside, and the other, in falling past, receives a fearful blow on the ribs. This is followed by a smashing charge, and again points in the great fight are level.

"But the challenger now lowers his head, and with one great rush goes in at the other. Instead of a crash there is a dull thud; then with one supreme effort, he turns his head, and the old monarch is lifted from his feet and thrown down. He struggles to his knees, but his head falls forward; again he makes the effort, but he suddenly collapses in a heap. The victor sniffs the twitching body of the vanquished, then moves away, followed by the herd.

"The spot-lights of Nature still shine through the trees; a few leaves float slowly down, twisting and slipping on their journey to the ground, and as the curtain drops on this woodland drama, we see the squirrel in the oak sit up once more, to resume his interrupted meal."

In the autumn months scenes such as this are daily taking place, but not all with a fatal ending. In most

of our large forests we can look upon similar scenes, and if the photographer makes it his duty to become friendly with the keepers, he will probably have an opportunity of obtaining records which will repay him for his trouble

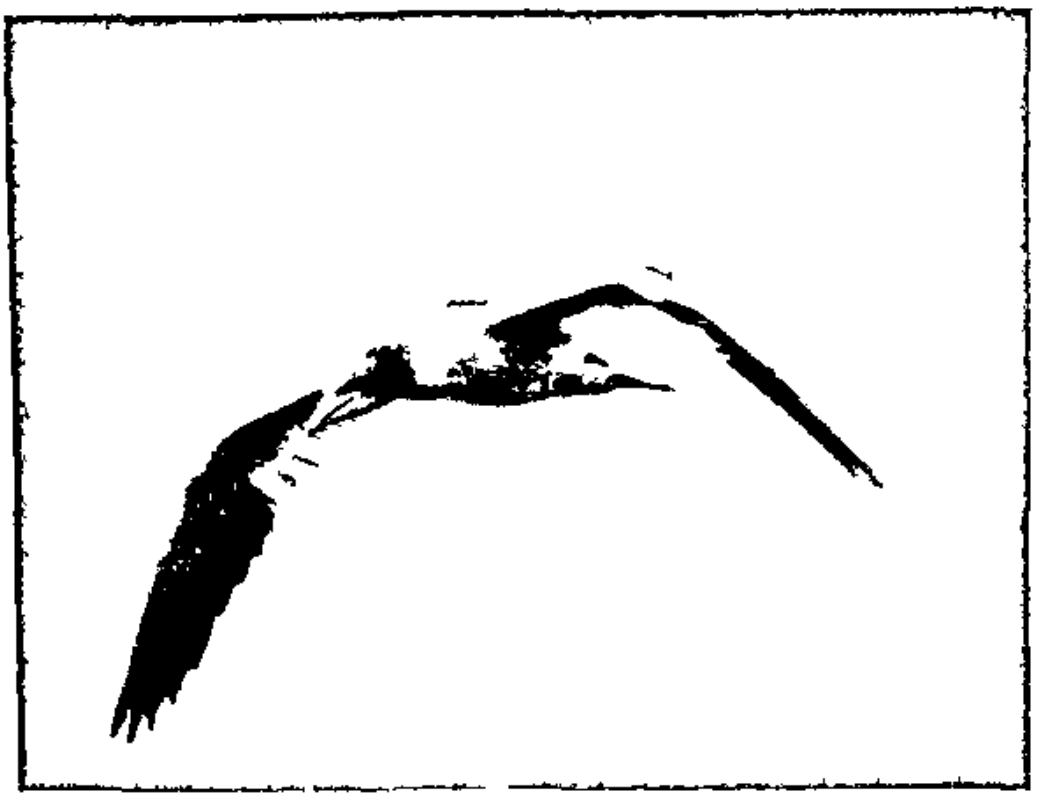
## CHAPTER IX

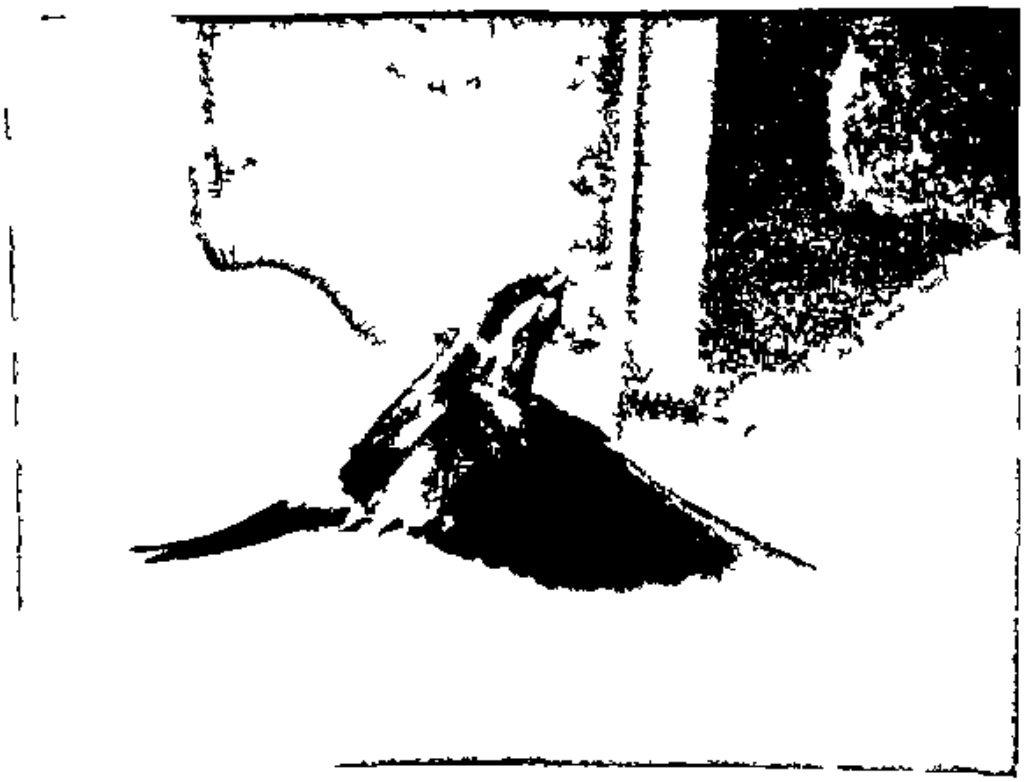
# High-speed Nature Photography

THE photographing of birds and insects in flight calls for a lot of common sense and ingenuity on the part of the worker. Those nature photographers who have not tried this branch of photography should certainly give it a trial; it is fascinating in the extreme, for one never knows until the plate is developed what wonderful actions the camera will portray.

A focal-plane shutter is essential; a fast plate, such as the Imperial Eclipse, should be used, and the stop of the lens must be adjusted according to the conditions of light. On a bright winter day, say between eleven and two o'clock, the lens should be used at its full aperture of 3.5 and an exposure of not more than 1/300 second should be given. In the summer the lens can be stopped down to F6 and an exposure of 1/800 second can be given with perfect results.

When taking a photograph of a rapidly moving object, say at twenty or thirty yards from the camera, such as an express train or a car travelling at racing speed, or a galloping horse, it is not always easy to make the exposure at the correct moment. First the eye has to pick up the object on the finder of the camera, the eye flashes the message to the brain, and that in its turn must be conveyed to the finger on the release of the shutter, the latter has to travel across the plate, and the slightest hesitation





*Top* Gannet go ng full peed down w nd Expo u e 900 e ond *B om* Hou e Ma n fl ng to nest Expo u e 900 second The b rd was t ave l ng at about 35 m p h n e feet f om came a

[*Fa ng page* 10

means that your subject has passed out of the field of view covered by the lens before your shutter functions. The nearer the object is to the lens the more difficult it is to obtain, and when you are trying to pick up a bird travelling at about forty miles per hour, only eight or nine feet from the camera, the difficulties are increased a hundredfold.

Before the photographer attempts to photograph birds, he should expose a packet of plates in testing his skill. A good way to do this is to fix up the camera in the garden about twenty feet from a wall or other plain background. Focus a spot nine feet from the lens; this can best be done by getting a friend to hold up a sheet of newspaper. Now get your companion to stand either to the right or left of the apparatus, and to throw a tennis ball past the camera as near as possible in the line focused. With your eye to the finder, make your exposure as the ball passes. I think I shall not be far out when I say that on your first attempts you will find that most of your plates will be blanks. The exposure must be made just as the object is entering the finder; if you are quick you will probably find that on development the ball is just passing off the plate on the other side. A direct vision-finder should be used, but perhaps the best plan, at least I find it so, is to dispense with the finder altogether. Instead, you get a fairly good idea of the space covered by the lens, and keeping your eyes fixed on this, make your exposure as the object enters that field of view. All my most successful photographs of birds in flight have been taken in this manner. The chances of obtaining a sharply focused picture of a bird in flight are about ten to one, for with your lens working at full aperture there is a very small margin for that bird to travel in.

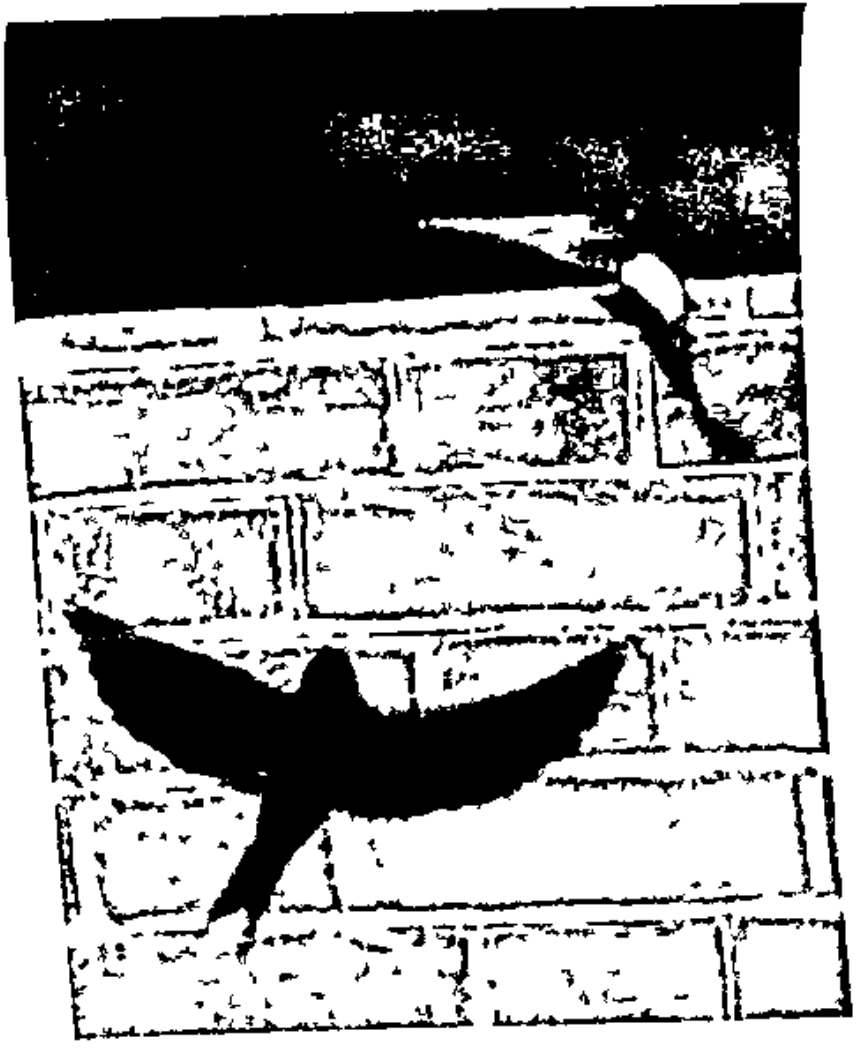
If the bird should be flying to its nest your task is

easier, for by watching you can find out the approximate line of flight usually taken.

When using a focal-plane shutter the photographer occasionally obtains freak photographs, but these are rare. One of the most remarkable of these is my photograph, "The Shadow on the Wall." In the top right-hand corner a house-martin is seen flying to its nest, which was under the eaves of a house. The bird is not very distinct, as it is just entering the deep shadow made by the gutter, but the position of the wings and tail can be seen. This photograph has been very severely criticised by photographers and others; my critics have tried to prove that the photograph is faked, but I can assure my readers that the reproduction is from a perfectly straight print made from an untouched negative. My critics say, and in this I am quite in agreement with them, that a bird in the position shown cannot possibly throw a shadow of the shape shown on the wall beneath. The explanation, however, is quite a simple one; it is a freak of the focal-plane shutter. When I released the shutter, the narrow slit travelled down the front of the plate, the shadow being exposed before the bird. In the brief space of time that it took the slit to travel from the shadow of the bird to the bird itself, there was just time for the latter to alter the position of its wings. The shadow really shows a previous movement, and also gives some idea of the great speed with which small birds use their wings during flight. It will be noticed that the martin has its wings almost at the lowest point, while in the shadow they are raised and fully spread; the bird has its tail open, while the shadow shows it closed. When I made this exposure I was using my Dallon telephoto lens at its full aperture of F5.6, my camera was fifteen feet



Buzzard alighting at her eyrie.



"The shadow on the wall."

A House Martin flying to its nest throws its shadow on the wall.

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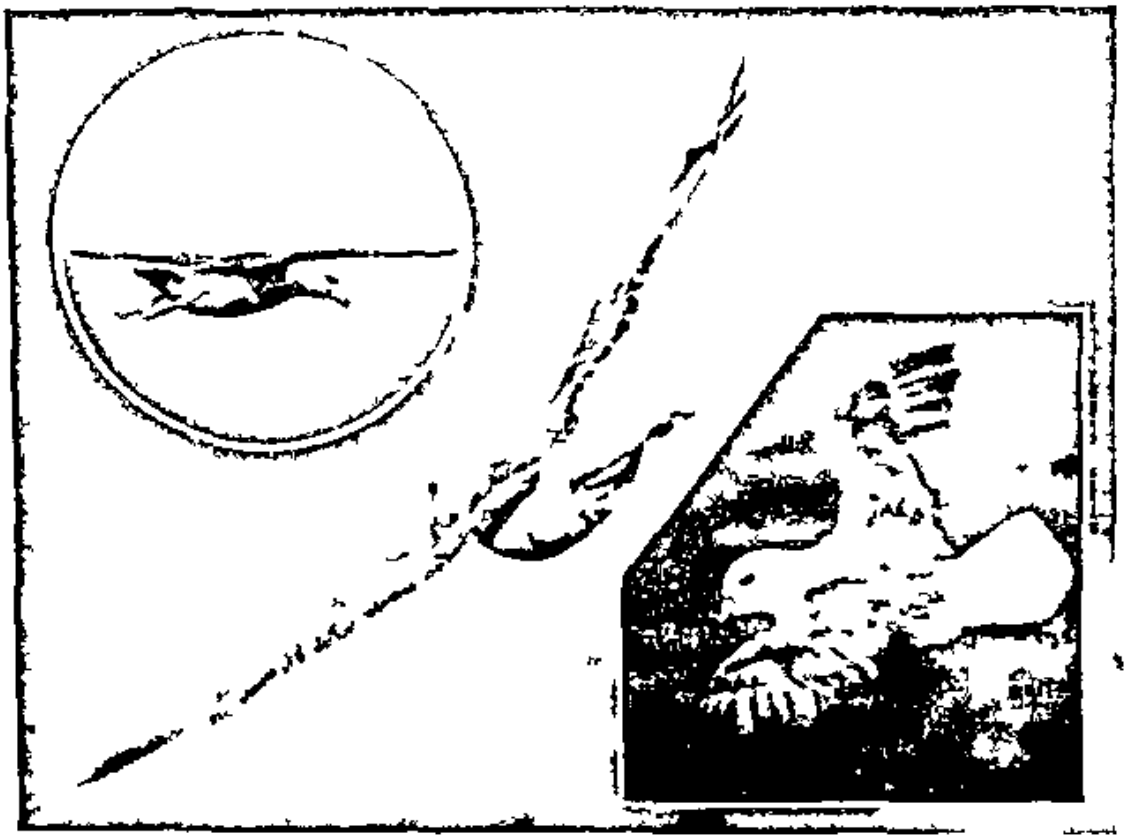
from the wall, and the exposure was about 1/900 second at seven p.m. on an August evening. This shows the possibilities of this splendid lens and also the speed of the "Eclipse-ortho" plates. These colour-sensitive plates are most useful in the evening or early morning when the light from the sun is more yellow than in the height of the day.

When I was photographing the house-martin flying to its nest I was only nine feet from it; the bird seemed to travel to its home at a terrific speed, and it was difficult to make the exposure at the correct moment; I exposed about a dozen plates, and obtained two good results. A bird like this usually has a certain line of flight when it approaches its nest; I took careful note of this before exposing, then got a friend to hold some object in that line that I could focus. The bird was only about three inches out of that line when I released my shutter, and even this slight deviation has caused it to be slightly out of focus. The exposure in this instance was 1/900 second, with the Dallon at full aperture at six p.m. in August.

On steep cliffs, such as those found on Ailsa Craig, the Bass Rock and the giant cliffs of St. Kilda, the bird photographer has many good opportunities to photograph birds in flight, especially if a wind is blowing. If it is possible to find a position where the birds coming round a corner of the cliff meet the wind the photographer should obtain some most interesting results. The light is so brilliant over the sea in the summer months that the lens may be stopped down to F8, and an exposure of 1/1000 second given. This gives much more latitude in the position of your subject, for instead of a depth of a few inches being in focus, you have several feet. The

birds being so much larger, you are able to get farther away from them, and this also is an advantage in all ways. On one of the beetling cliffs of St. Kilda, which was about one thousand three hundred feet in height, I was able to find a sheltered nook in which to crouch with my camera before me. As the thousands of fulmar petrels flew past, many came in close to the cliff, and it was these that I was after, for in a certain position they met a wind which caused them to pause in their flight. On this occasion I used the finder of my reflex camera and only exposed on those birds which were in focus. A bird in flight moves so rapidly that it is hopeless to attempt to focus with your reflex finder, the only plan is to focus a certain distance and wait for a bird to enter the field focused.

The three photographs of the fulmar gliding with the wind, turning, and gliding back against the wind show very clearly the action of the wings. When coming along with the wind, the wings are fully spread, the feet are placed far back under the tail, and the whole body of the bird, together with its wings and feet, make a perfect streamline. On reaching a certain spot in front of me the fulmar wished to turn; it first banked at the angle shown, then curved the feathers of the tail into a crescent, and, as it was turning left, placed the left foot square against the wind; by performing these three actions the bird turned quickly, then glided back against the wind. When travelling against the currents the action is very different to that when gliding with them. Now it will be seen that the wings are bent at the elbow joint, and the tail is well spread and raised slightly to assist in the balance of the body. The whole action is now really a falling one, the bird using its weight to travel against the



Fulmar Petrel

*Left* Gl d ng down w nd

*Centre* Turn ng

*R ght* Glid ng aga nst the w nd

[*Fac ng page* 106.

wind. Instead of an easy smooth action, as when travelling with the wind, all movement seems to be forced. The bird travels like this for thirty or forty feet, then gives a few flaps of its wings and glides on again. The fulmar can easily be picked out from a great flock of sea-birds by this peculiar flight, that is, three or four flaps and a glide, then more flaps and another glide. It is a delightful flight to watch, and when you see anything up to ten thousand flapping and gliding before the face of the cliff it is a sight never to be forgotten.

On my second visit to St. Kilda I took a very large supply of plates with me and exposed every one. We were waiting for our boat to arrive on the morning of our departure, and I found that I had just one plate left. As there was no sign of the steamer on the sea, I walked up the steep slope leading to the nearest haunt of the fulmar petrel. Thirty feet down from the summit of the cliff I saw a fulmar come to its sitting mate and offer it food by hovering in front of it. I was lying down with my head over the edge of the cliff, and in this position I held my camera in front of me with the bird on the nest focused. I had to wait nearly an hour before the male returned, but the photograph of it hovering repaid me for my trouble. However, it might have been better had not I hesitated in my exposure. If I had taken it a moment sooner I should have had the bird's head showing, but it shows the action of the wings and tail.

The box in which my plates were packed caused some amusement on the journey home. I had to change at several places, and one or two railway porters, on attempting to pick up the package, found it apparently glued to the platform! The only drawback to plates is their weight, but, notwithstanding this, I much prefer them to flat films.

One of the most difficult tasks I ever undertook in connection with photographing birds in flight was endeavouring to obtain pictures of the kingfisher After watching the bird for several days I found one line of flight on a lake where I hoped it would be possible to make a few exposures But the chances were greatly against my obtaining anything satisfactory because it was not likely that the bird would travel twice in exactly the same line As I was working within twelve feet of the line focused, there was very little margin to play with, and a few inches out either way would mean failure During the day I spent in my hide I was able to make about a dozen exposures In only one of these was the bird anywhere near in focus The kingfisher travels at about forty five miles per hour, so as it dashed past the few feet covered by my lens the slightest hesitation meant failure However, if the photographer obtains one good negative out of a dozen when working under such conditions he can congratulate himself, and I was more than satisfied with the result I secured

## CHAPTER X

# Wild-life Cinematography

CINEMA films of the wild animals of the world taken in their native haunts have enabled millions of people to see in comfort what had previously only been looked upon by the experienced and intrepid naturalist.

On August 29th, 1907, there was a private view at the Palace Theatre, London, of the first set of films of wild bird-life ever taken. For three months previously I had been busy with my cinema camera taking photographs of some of our British wild birds in their native haunts, and this was the first occasion that they were shown to the public. The large theatre was filled with representatives of the Press and others, and the splendid reports that appeared during the following days in over one hundred London and provincial journals proved to me that I had provided something that the public were only too anxious to see, and it gave me encouragement to proceed with this interesting work. In a little booklet given to each member of the audience it stated that "'In Birdland' is a bold attempt to bring the hidden beauties and wonders of the country into London, and the nature photographer who is responsible for these films awaits with interest the verdict of the naturalist, the artist, the nature student, and, lastly, the great public, whose love of the feathered creatures of the air is proverbial."

Since then I have produced a great many Nature films, *which have been shown all over the world.* Some of these were reproduced in colour by the Pathé method of mechanical colouring, and were far more true to Nature than any actual colour cinematography that I have seen. One amusing mistake, however, was made in the colouring. I sent the negatives to Paris with instructions for the colour; one of these was of our common wild duck approaching and settling down upon her eggs. The people over there evidently consulted a book on bird-life with coloured illustrations, and on looking up the wild duck saw the brilliant colouring of the handsome drake. Here, they thought, was an opportunity to show the capabilities of their method of colouring, and when I received the film back I saw that they had coloured the sombre brown duck in all the gorgeous colours of the drake! As the drake never sits or goes near the nest it must have been a great disappointment to find that all their good efforts were in vain.

Modern inventions have enabled the amateur photographer to take with the greatest ease cinematograph pictures in miniature of moving objects. There are many makes of these small cameras now on the market, and if the photographer cares to go to a little trouble there is no reason why he or she should not obtain some excellent films of our wild birds and mammals. The work is really easier than ordinary plate photography; there is no waiting for the most appropriate moment for exposure, and the photographer need not get so close to his subject, always a great advantage when a hide has to be erected. Several of the makes which are advertised in our photographic journals can have lenses fitted with a longer focus than the standard lens usually supplied.





Head of Red Deer.

(Facing page 110.

A lens of four inches focus, which would not be too large to fit to one of these small cameras, would act as a very powerful telephoto lens, owing to the actual picture taken on the film being so very small. There must be a very accurate focusing scale on the lens mount, and the distance from the subject must be measured carefully, so that the exact focus can be obtained. The slight noise made by these small instruments need not deter the photographer, for birds, and some of our mammals, take no notice of a continuous noise. The sudden click of a photographic shutter will often scare the most confiding creature, but that same animal will take absolutely no notice of the continuous noise of the cinema camera.

When I commenced bird cinematography the cameras were very noisy; the first camera that I had of this kind made such a rattle when turning the handle that I thought it would be hopeless to attempt to use it for photographing wild birds. At my first attempt I was in a hide in my garden on a cold winter morning; before me was a cocoanut which I had focused, and I was waiting for a tit to arrive. I had my camera, with the exception of the lens and the turning handle, wrapped up in a thick blanket to deaden the noise. Presently my bird arrived, and I commenced turning the handle, and, although there seemed to be enough noise to frighten away all the birds in the garden, the great tit took not the slightest notice, but proceeded with his meal. That was my first experience of filming a wild bird, and it was in the winter of 1904. This early camera did not give a very steady picture, and it was not until the spring of 1907, when I obtained a much better camera, that I secured really satisfactory films of our wild birds and mammals.

However, that first cinema camera showed me that the

noise of the apparatus need not deter me in any way, and, although my second camera was not by any means noiseless, I was never troubled through my shy sitters being frightened. Sometimes when the noise of the instrument stops, the bird will fly off, but that does not matter, for the picture has been taken. Later, with a more up-to-date camera, I found that the female hooded crow was the only bird that ever flew away when I commenced to turn the handle; if I had begun to turn before the bird arrived I might have obtained my pictures, but, as it was, the very slight sound that reached this wary bird caused it to fly off.

There are many makes of cinema cameras on the market, but all are not suitable for nature cinematography. It must be possible to focus direct on to the film, or on to a small piece of frosted film placed in the gate. The photographer has to work under all kinds of conditions, where accurate focusing by a scale on the mount of the lens would be almost impossible. A set of lenses, varying in focus from about one and a half inches to ten inches, fitted in focusing mounts, should be obtained. The focusing mounts for the lenses of four to ten inches must be sturdy to prevent vibration, and the front of the camera must be strong to hold them securely.

The most useful lens for general nature cinematography is one of five inches focus working at about F4.5. It will not often be necessary to use it at full aperture; by stopping down a much sharper picture is secured, and it is necessary to have the whole of the picture as sharp as possible, owing to the great enlargement it has to undergo when shown on the screen. As a rule it is fairly easy to get the picture quite sharp, as the photographer can be farther from his subject than when taking photo-

graphs with the plate camera. A bird the size of a chaffinch would be a very small object on a quarter plate when taken at a distance of fifteen feet with a five-inch lens, but that same bird taken at exactly the same distance on the small film of the cinema camera will be quite large enough to give a very fine picture when shown on the screen. It will be seen therefore that a five-inch lens acts as a thoroughly efficient telephoto when used on the cinema camera. That of ten inches focus is an exceedingly powerful telephoto lens, and is very useful for photographing birds and mammals that it is difficult to approach. With my ten-inch lens I obtained some rather remarkable pictures of gannets on Ailsa Craig, taken at a distance of not less than eighty yards. These birds, grouped together in a mass, were in such a position that it was impossible to get nearer to them, but the ten-inch lens showed them larger than life size when the film was projected on a full-size screen.

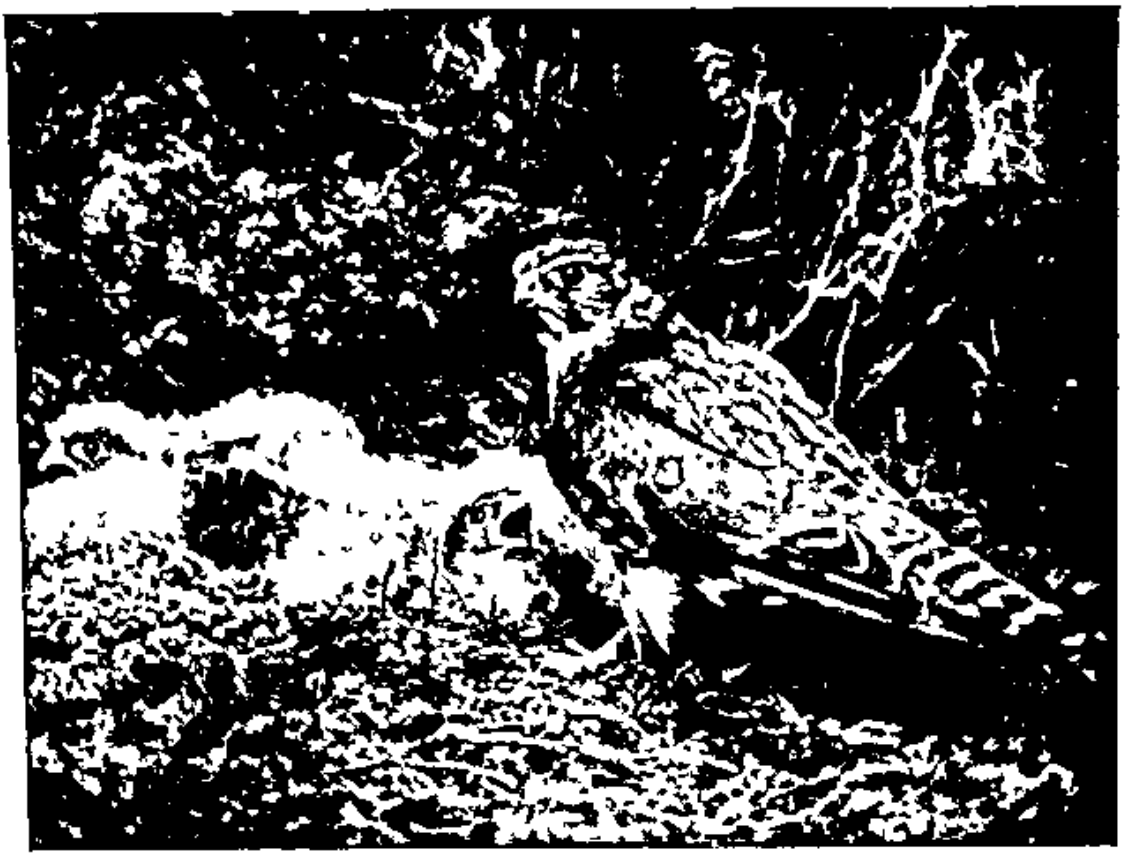
I have a little lens of one and a quarter inches focus, with an aperture of F3. With this I have secured photographs of excellent quality on days that were too dark for ordinary snapshot photography. One film shows a family of young coots leaving their nest; a dark thundercloud was overhead, and it seemed far too dark for photography, but I used this small lens, placing my camera within four feet of the nest, and the resulting film was as perfect as if taken in a good light with a lens of smaller aperture.

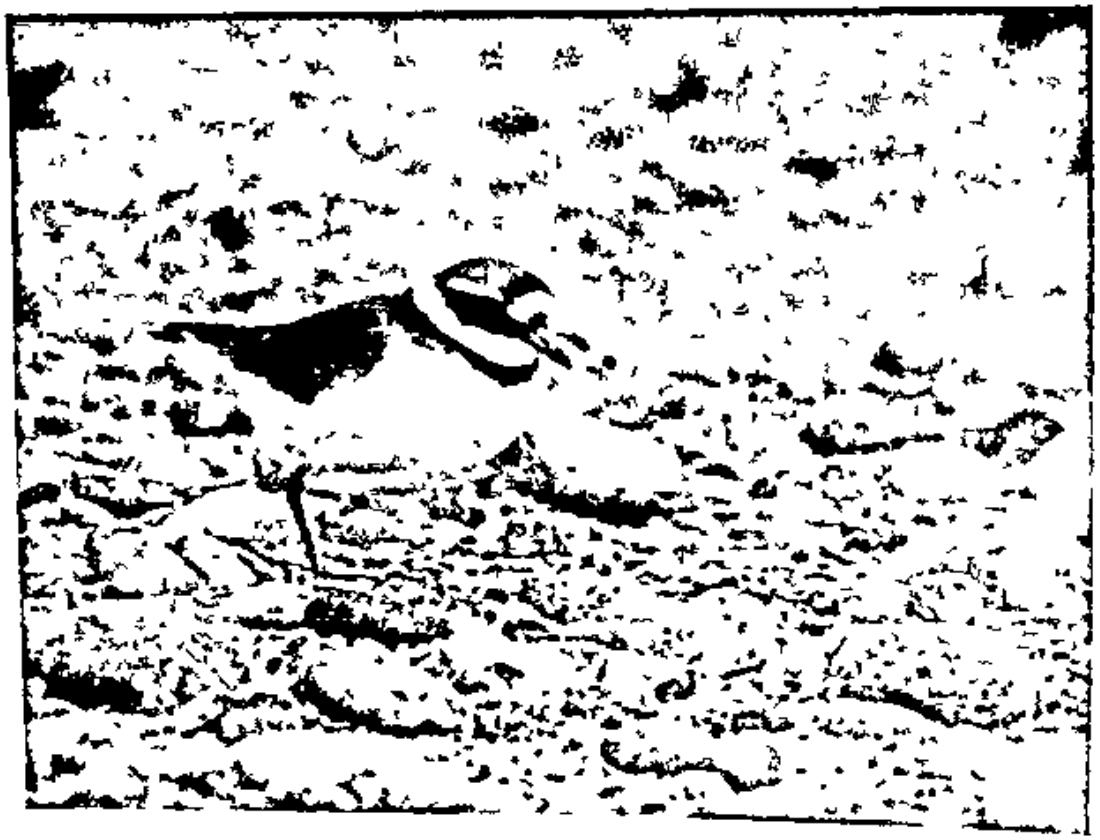
When attempting to take pictures of a bird or mammal with a cinema camera it is most important to place the camera in position and get it properly focused before building the hide; it is easy to construct the hide round the apparatus, but exceedingly difficult to attempt to fit

it up inside after it is built All the lenses should be fitted with a hood; the short focus ones will require a fairly large hood, twice the diameter of the lens mount, but those of five inches focus and over may have a hood the same size as the lens mount, and about four inches in length The hood prevents glare, and pictures may be taken directly facing the sun, without any fear of being spoilt.

If the camera is worked by hand it is as well to turn the handle fairly quickly. If twenty-five or thirty pictures can be taken per second the finished picture is far more satisfactory than if they were taken at the normal speed of sixteen per second. The modern projector, as used in our picture theatres, passes the film through at the rate of about twenty pictures per second, and if only sixteen are taken in the camera, all movement will be exaggerated Pictures taken at the higher speed will show a slightly slower action than actually took place, and the result is far more pleasing.

A few years ago I saw a man at a swimming gala with a cinema camera; as the various events took place he photographed them, and I noticed that he was turning the handle of the machine very slowly, about one turn in four seconds On speaking to him I discovered that the camera had only arrived that morning, and this was his first attempt at cinematography, and he explained to me that he was taking slow-motion pictures of the diving, etc, and they were to be shown in his cinema hall all the week! I endeavoured to point out to him that the finished pictures would be the exact opposite to slow-motion, but he was sure he was right, and continued with his task. Of course, when the films were shown they were found to be hopeless, for every movement was





*Top* Merlin and her young

increased to such an extent that the whole thing was a farce.

To get the correct action on the screen the films should be projected at the same speed at which they were taken. If only four pictures are taken each second and sixteen per second are projected, all movement is increased fourfold. I have found that a great many amateurs, on acquiring one of the small cinema cameras, think that to produce slow-motion effects on the screen the pictures must be taken slowly. The slow-motion films that we see in our cinemas, and which give such graceful effects when showing the actions of the human body, or of birds and other animals, are, as a matter of fact, taken at very high speeds. To obtain the best effects about two hundred and forty pictures are taken every second, and when these are projected at about twenty per second the slow-motion effect is obtained.

In the early days of cinematography a well-known artist wanted a film taken of a horse jumping so that she could see the action of the muscles. One of the few cinema firms that were in existence in those days undertook the task, but as the pictures were taken at the normal speed of sixteen per second it was no more easy to see the actions of the limbs than in real life. I then attempted to obtain a satisfactory film for her, and probably took the first slow-motion film ever produced. I managed to gear up my camera so that about sixty pictures were taken each second, then when we projected these at about ten per second every action of the legs and muscles were shown clearly, and the pictures were a very great assistance to her in producing one of her celebrated paintings.

I used that same camera for photographing birds in flight, and obtained some pleasing results, but the speed

was not great enough to show the real action of the wings, and it was not until the ultra-rapid camera appeared that I was able to reveal some of the secrets of flight. One of my films was entitled "Nature's Gliders," and was shown in thousands of cinema theatres in this country, in America, and on the Continent. For the first time we were able to see the real action of the wings of many of our birds. One of the most interesting facts shown was the action of the legs when a bird took off from a perch. It helped to balance its body with these, and, as the wings reached the lowest point, the legs were brought forward, then as the wings were raised the legs were pushed rapidly backwards, which appeared to have the effect of slightly raising the body.

When we watch a bird land we notice that the wings are brought quickly to the side, but slow-motion photography has shown us that before closing them they are raised and lowered three times after the feet touch the ground, and this appears to be a balancing action. Another interesting thing revealed was that when a bird commences its flight the wings are brought forward as they come downwards, even in front of the beak; in fact, they appear to have a circular motion which has the effect of lifting the bird and also forcing it forward, and it is not until the bird has gained speed that the wings are used at right angles to the body.

These and many more secrets of flight the slow-motion camera opened up to our eyes, but perhaps the most interesting secret ever stolen from a wild creature by the camera was that in connection with the cuckoo. For over a thousand years this remarkable bird deceived the naturalists of the world. During all that time it was thought that the female cuckoo, when depositing her egg



Green Veined White Butterfly

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in the nest of the fosterer, carried it in her beak after having laid it on the ground, but my cinema camera, working in conjunction with my friend, Mr. Edgar Chance, stole the secret from her, and showed a surprised world that the cuckoo always laid her egg direct into the chosen nest and did not place it there with her beak. But even with these photographs, and a slow-motion film of the whole performance, many naturalists refused to give up the old theory which had held good for so many years. If the incident of the laying had been seen and photographed only once or twice, it would not be very conclusive, but observers, following out Mr. Chance's methods, have watched the cuckoo lay direct into the nests of various fosterers on over one hundred occasions, and I have filmed it many times, and never once did the bird show the slightest sign of using her beak. On the other hand, the remarkable fact remains that never once has there been a satisfactory record of anyone ever having seen the cuckoo deposit her egg with her beak.

Some of the small-size cinema cameras on the market have an arrangement for gearing the camera up to take slow-motion pictures, and with these some wonderfully interesting nature films can be taken by amateurs. When geared up in this way the noise in increased, but again it will not scare the wild creatures. I have used the ultra-rapid camera quite close to some of our wildest birds, and although it makes a great noise when taking two hundred and forty pictures each second, I have not noticed any fright on the part of my subjects.

Many cinema cameras with automatic exposure may be used in the hand and quite satisfactory results obtained, but when taking films of birds feeding their young, or other similar nature subjects, a tripod should be used, and

especially if working from a hide. Any firm camera tripod will do for the small-size cameras, but with the full-sized cinema camera a solid tripod should be used, with a top which can be moved in all directions. Such a tripod head is very useful when taking birds in flight. I have sometimes had the assistance of my wife, and while she has turned the handle of the camera I have kept the bird in the field of view of the lens by manipulating the movable tripod head. We once used a boat instead of the tripod head in a most satisfactory manner. We were stalking a number of swans on a large lake with the ultra-rapid camera; our intention was to obtain a slow-motion of the great birds in flight. When they did take to their wings, the assistant in the boat used his oars in a clever manner, as the birds passed before me, he turned the boat so that the lens was following them. The film that I obtained on that occasion was one of the most successful slow-motion pictures of flight that I ever took. As I turned the handle of the machine, the boat rocked rather alarmingly, but we managed to keep the birds in view for about a quarter of a minute, and in that time three thousand six hundred photographs had been obtained on two hundred and twenty-five feet of film, and as all movement is slowed down, the movement of the boat hardly showed when the film was projected.

The ultra-rapid camera that I was using with its solid tripod weighed somewhere about ninety pounds, so it was not the kind of apparatus that one cared to carry far, but we did manage to get it down the steep sides of the Bass Rock in the Firth of Forth to obtain slow-motion pictures of the gannets which nest in such numbers there. When the camera was focused upon one group of birds, and I was ready to expose the film, the birds refused to move,

so one of the light-keepers who was assisting us told us that he would shift them. He went to the top of the cliff, collected a number of big pieces of turf, then threw these at the sitting birds It did have the effect of making some take to their wings, but in the finished film the large lumps of turf, which were thrown with such force at the great birds, looked like pieces of gossamer floating down !

The cinema camera in the hands of the nature photographer opens up a vast field for obtaining interesting pictures. Cameras for taking the full-size 35 mm film are so compact, and weigh so little for this class of apparatus, that they can be carried with ease, and the nature photographer who keeps his camera at hand and ready loaded may often obtain a film of such interest that it will bring in a very handsome return

## CHAPTER XI

# Photographing Insects

THE photographer who goes in for this branch of nature photography has a wide field to practise in, and there is a lot of valuable research work to be done. He is not confined to any special season, although the spring and summer months will be his busiest time. This branch of photography can be carried out in the fields, or the creatures he wishes to photograph may be brought to the laboratory or nature studio. A well-lighted greenhouse is a very suitable place to work in, but even with the subjects brought to your own home, there will be an enormous amount of patience required. I was once endeavouring to obtain a cinema record of a very beautiful foreign moth escaping from its chrysalis; the whole thing would have made such an attractive film that I spent the best part of a week in waiting and watching. I had been standing by my camera one whole morning with no sign of the insect appearing, so thought it safe to go indoors for a few minutes to fetch a book. On my return to the greenhouse I saw that beautiful insect sitting with its magnificent wings extended outside the now empty chrysalis case! My readers will perhaps be able to appreciate the chagrin I then suffered! I had other chrysalis cases from which the moths had not yet emerged, but this was



*Top* Puss Moth Caterpillar
*Bottom* Stag Beetle

the only one that escaped from its prison during the hours when it was light enough to make an exposure.

Some quite satisfactory photographs can be obtained of many of our butterflies by stalking them in the open country. Most of them, however, are so restless that there is not often time to arrange the camera on a tripod and focus and get the plate in position before the insect takes to its wings. The best plan is to stalk them with the telephoto lens, but the great drawback of this kind of photography is that as a rule only just the creature you are taking is in focus, while the remainder of the plate is a very unsatisfactory blur. A good way to photograph our butterflies is to arrange a natural background in your nature studio, then introduce your butterfly to it. But even under these conditions it requires patience, and personally I would far rather be pitting my wits against some wild bird or mammal than attempting to expose plates upon some elusive insect.

Some of the creatures that the photographer may wish to photograph are small, and even if taken life-size, would not be a very satisfactory size. When I have had to take such subjects, I use a short focus lens on my camera, then, by getting close to it, quite a good photograph may be secured, but it is very necessary to have a camera with a very long extension, and a lens with a large aperture. Spiders and other small creatures can be photographed in this way, and if the lens is a good one, plenty of depth of focus is obtained, and good sharp photographs result which can be enlarged. It is far more satisfactory to get a sharp small image on your plate, than a large one which may not be properly focused; the former may be enlarged to many times life-size, while the other will not stand this treatment.

Excellent photographs may be obtained of many of our British moths by taking them at night with the aid of flashlight. A lens of about eight inches focus is the best for this work, fitted with a focusing mount which will enable you to work within five feet of your subjects. The camera must be used with a tripod, and another implement required is a small flashlamp, such as is used by Press photographers for close-up work. The moths can easily be brought to trees in suitable situations by a method known as "sugaring." You make a mixture of coarse treacle, beer and coarse brown sugar, adding a small quantity of rum. This is painted on the trees in patches about six inches square, on warm close nights, with the wind in the south or west. I have seen such bait covered with moths, and what makes this work interesting is that you never quite know what you are going to find on your "sugar"; you may find a number of common moths sucking up the attractive food, or you may have the good fortune to find a rarity. There is little danger of the moth leaving while you are fixing up the camera. If your lens is focused for five feet, it is not a difficult matter to arrange the camera at this distance from the trunk; if the lens is a good one you have a latitude of two or three inches without your subject being out of focus. The right amount of magnesium powder to use can be ascertained by experiment; it will, of course, vary according to the aperture of your lens. The flash should be fired either from immediately above the camera or slightly on one side.

I was out on one favourable night and found a number of moths on the trees that I had "sugared." A rather dense, but warm, fog seemed to make it a still more attractive night for the moths to be abroad. As I made



To to se-shell Butterfly

[Fac ng page 1•

my way across a large field I lost my way in the mist, and as I was trying to pick up a point that I could recognise I heard a loud snorting sound behind me, and on turning round to investigate, my torch showed it to be an angry bull! It was only a few feet from me, its head was lowered, and it seemed to be preparing for a rush. At my feet I fortunately saw a large stone; picking this up as quickly as I could, I flung it at the angry animal; my aim was true, for it struck it between the horns, and it paused long enough for me to escape!

Photographs of butterflies emerging from the chrysalis always make attractive pictures, and also are easy to dispose of to the editors of our illustrated magazines. If a number of chrysalis cases are obtained, one can usually get a rough idea of when the occupants are likely to escape. One or two may come out, then is the time for the photographer to wait and watch, for it is only by exercising an enormous amount of patience that success is assured. If possible, it is as well to have two or three cameras focused on the one object if a series of photographs of the insect emerging are to be obtained, for when the chrysalis once bursts open, the after movements are rather quick. The cinema camera may be utilised for this if small photographs will satisfy the worker. Although cinema film will stand enlarging on the screen to enormous dimensions without showing grain, yet one isolated picture taken from the film and enlarged on to paper to, say, eight by six inches, will show a very coarse grain. When the film is passing through the projector, one small picture follows another with such speed that this grain is not apparent; if we were to stop the machine and look at one stationary picture, the effect would be one of extreme coarseness. However, cinema films of the

standard size may be enlarged to about four by five inches very successfully if we use a light in the enlarging lantern which is not too strong (a single acetylene burner is better than electric light), and have a fine ground-glass screen between the light and the negative. By using this method I have obtained very satisfactory enlargements up to half-plate size, that is, six and a half by four and three-quarter inches, but the negative must be exceedingly good to allow of such a magnification.

Camouflage in nature can be pictured more successfully in the insect world than in any other branch of nature photography, but to obtain a correct rendering of the colour values it is necessary to use panchromatic plates and a colour screen on the lens. The Imperial panchromatic plates used with a KI filter are excellent for this work, as a fairly rapid exposure can be given, but usually when taking subjects of this character they remain motionless and a longer exposure may be given. Moths and other insects at rest on tree trunks, palings and on the ground will offer an endless supply of subjects. If an ordinary plate is used, the resulting photograph will often show the creature standing out very distinct from its surroundings, but the panchromatic plate and colour-filter will remedy this. Caterpillars will also offer a very wide field for the insect photographer, and if exposures of these can be made while they are at rest correct colour renderings will be obtained with the panchromatic plates. If, however, the photographer is anxious to obtain quick exposures of these insects showing the arched back or other actions while moving, I suggest that the Imperial Eclipse-ortho plates be used without a colour screen. These splendid plates give quite a good colour rendering when used in this way; in fact, I use them for all my nature work.



*Top* Queen Bee surrounded with her attendants
*Bottom* Swallowtail Butterfly

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I once had to obtain slow-motion photographs of a butterfly in flight. The camera for this work was in those days a very cumbersome apparatus, weighing with its tripod about ninety pounds, so it was out of the question to attempt to stalk one in the open fields. A fairly long length of film was required, and as a butterfly in flight seldom keeps in a straight plane, it seemed as if I was up against an almost insurmountable difficulty. However, I succeeded in the following way. I obtained two sheets of plate glass about two feet long by eighteen inches wide. I arranged these in an upright position four inches apart. The sides and top were enclosed, while the scenery, which I made as natural as possible, was fixed in position just outside the further glass. The whole of the glass, with the exception of about half an inch around the margin, was focused, the camera was then closed and all was ready for the exposure. Now I introduced a cabbage butterfly between the glass plates, as this made a good contrast to my background, and almost immediately the insect commenced to fly about inside in a perfectly natural manner. The resulting film gave in slow motion all the movements of the butterfly's wings, and there was nothing to show that it was confined between glass.

A glass tank, two feet long by eighteen inches high, with a space of four inches between the glass, is a very useful appliance for the nature photographer. It is specially useful in obtaining pictures of the creatures which inhabit our ponds and rivers; they can be introduced and suitable backgrounds can be arranged immediately behind it. A common fault that is often detected when such a tank is used is the reflection of the photographer in the plate-glass sides. I remember seeing a

cinema film of pond life, with the movements of the photographer as he turned the handle of his camera faithfully recorded on the screen! This fault can easily be overcome with a very simple device. About three yards immediately in front of the tank, and square with it, a black screen is fixed up; this can be so arranged that one side of the screen is level with the side of the tank. Now if the photographer places his camera with the lens just outside the margin of the screen, there cannot possibly be any reflection of his movements in the glass. The camera is not square with the tank, but this does not matter, and makes very little difference in the focusing. If the camera has a back with a side swing to it, the whole can be focused sharply, while the black screen prevents any reflections from anything beyond.

## CHAPTER XII

# Big-game Photography

By Major A. Radclyffe Dugmore, F.R.G.S.

THIRTY or forty years ago man regarded the big game of the various countries as having been placed on this earth chiefly for the purpose of furnishing the sportsman with something to kill, and many a man was almost a hero in the eyes of his fellow-beings because he had shot big game and had to his credit a bag which included the larger and more dangerous wild beasts. But since the latter part of the last century a marked change has developed in people's attitude towards all wild creatures, more particularly the larger animals. It is no longer considered altogether clever or praiseworthy to kill without reasons. Animals are more carefully protected.

To-day a great many men, and even women, too, satisfy their desire for hunting big game by using the harmless camera instead of the rifle. We all enjoy overcoming difficulties. That which is too easy of accomplishment offers little in the way of attraction, and certainly photographing any wild animal or bird is far less simple than shooting it. To begin with, a much nearer approach is necessary, which means that there is greater skill in stalking required, so that the primary object of outwitting the natural shyness of any wild creature is

satisfied, and that, after all, though we may not realise it, is the basis of the attraction in big-game shooting.

With the modern rifle of absolute precision and long range, the killing of an animal demands but little skill, and in most cases stalking to within the necessary range is a simple enough matter. With the camera, even though it be fitted with a long focus lens, a very much closer approach is essential; especially is this true of the smaller game, such as antelope, deer and others, which must be within a few yards of the camera if a successful photograph is to be obtained. It does not require much knowledge of the subject to realise how much difference there is between approaching to within fifteen or twenty yards and the rifle range of several hundred yards. The one is easy while the other is difficult; more so, indeed, than can be realised by anyone who has not tried it. Then again, in the one case you carry a compact and easily handled rifle; in the other, especially if it is a cinematograph camera with tripod, you have a cumbersome weapon. Still again, there is the difference between sighting a rifle, which demands only a reasonably steady hand and an approximate guess at the distance, and the many considerations in connection with the camera: light and consequent exposure, focus, composition, and, worst of all, the necessity of having a clear field of vision; an intervening twig, or even a blade of grass, may spoil a photograph, while it would not interfere with firing a deadly shot.

From the point of view of danger there may be some difference of opinion. One person will say that because more big-game hunters are killed than photographers it proves that the former is a more risky form of sport. But it must be remembered that in most instances it is

a *wounded* animal that does the killing. From my own somewhat varied experience I know that I have been within a most unpleasant distance of death on many occasions, and yet, though I can safely say that I have been as close, probably, as any man to such generally considered dangerous beasts as lion, buffalo, elephant and rhinoceros, only twice have I had to shoot in self-defence; though on two or three occasions my companion has killed when he thought it necessary. Whether my life was in actual danger is perhaps open to question. Anyhow, it cannot be proved.

The great risk that is run by the camera man is due to his desire to get too close to his quarry. He wants the animal as large as possible on the film or plate, and in his enthusiasm he oversteps, only too frequently, the margin of safety. That he does not pay the penalty more often is little short of a miracle. To be successful he must be a sportsman at heart and willing to take his chance. But, after all, if I may judge from my own observations, it would seem that, as a rule, even the most dangerous wild animals are not over anxious to come in close contact with man except under certain conditions, such as the fear of being cornered or in the defence of their young. Occasionally some animal, such as a solitary elephant or buffalo, a hungry lion, or a particularly bad-tempered rhinoceros, will attack with apparently no provocation. Such instances are, however, much more rare than is generally believed, notwithstanding the highly coloured accounts given by some men who are desirous of wearing the hero's wreath or who wish to justify their action in, what may be and usually is, unnecessary killing.

In these days cameras, both "movie" and "still," have been developed to such a high point of perfection

that many of the difficulties with which we, who were first in the field, were beset no longer exist Not only are the actual cameras more simple and far more reliable and effective, but new types of lenses, such as the Ross telecentric and teleros, and Dalmeyer Dallon, have been designed that are of infinite value to the camera hunter, and make it no longer necessary to use the cumbersome and slow telephoto lens which is so difficult to handle In fact, all equipment has improved to such a degree that looking back at our old outfits we cannot help wondering how we succeeded in getting even fairly good results We had to battle against difficulties unknown to those who have come more recently into the field of big game photography Yet is there not the feeling that the very fact of having to overcome so many difficulties added greatly to the pleasure that was ours when we managed to secure a satisfactory photograph? To-day we take things more for granted We buy our outfit ready made and feel full confidence that it will do its work, the element of uncertainty is almost eliminated, and perhaps some of the thrill and joy of the pioneer is lacking to those who are equipped with the modern marvels in the way of outfit

Fortunately there is one feature of the sport on which so far the genius of man has had but little effect, except in certain districts This feature is the wild animal s natural fear of man and the consequent delight that fills our hearts with joy when we are fortunate enough to overcome it, or perhaps I should say, outwit the highly developed sense of self preservation which has safeguarded most wild animals in their centuries-old fight against their predatory enemy—man Even this condition may to a great extent disappear owing to the

formation of the many and much-needed game sanctuaries. It does not take long for even the most timid animals to realise that man is no longer their enemy. In an incredibly short time they will come to regard us as harmless and even friendly beings, and when this time comes there will be no further need for careful stalking. All that will remain to us will be the obtaining of photographs of actual beauty, when pose, composition and lighting will take the place of merely portraying this or that animal at fairly close quarters. Camera hunting will then be less exciting perhaps, but there will always remain the joy of competition in the efforts to make the photographs as beautiful as possible. This, of course, is, or should be, one of the most important considerations even under present conditions, but many people lose sight of it in their effort merely to get close-up portraits.

Photography of wild animals may be divided into four methods: stalking, working from "blinds," night stalking with flashlight, and set camera work by day or night, that is to say, making the animal trip the shutter and so take his own picture. Of these various methods the best results are obtained when the work is done from a "blind" or hiding place. It requires great patience and a knowledge of the habits of whatever species is to be portrayed. One must be prepared for endless disappointments, but when things go well, when a red-letter day comes, all the blank and discouraging days or weeks are forgotten in the wonderful pleasure of securing good pictures of the animals in peaceful attitudes, showing no fear, for they should be unconscious of the presence of their fear-inspiring enemy man.

In contrast to this, stalking usually means a lot of

difficult work, and results in photographs of animals in startled or, at least, suspicious attitudes, and only too frequently the picture is spoilt by an out-of-focus blurred foreground. With certain animals stalking is almost essential. Elephants, for example, behave particularly well. Their great size means that a close approach is not necessary, fifty or a hundred yards with a fairly long focus lens should be near enough. Under ordinary conditions, with the wind in the right direction, it is easy enough to get within that distance, provided, of course, that reasonable care is taken. The African elephant, the only one with which I have had experience, has poor eyesight, they do not seem to worry about keeping a visual lookout. Against this, however, their sense of smell is remarkably keen; their hearing, so far as I can judge, is fairly acute. Therefore the most important consideration when either stalking or searching for them is to be sure that the wind is in the right direction. Some hunters use what is known as the "pepper box," this is filled with fine dust or wood ashes, and from time to time a little is sprinkled in the air to show which way the breeze is blowing. For my own part I much prefer to use a cigarette, as the movement of the smoke gives very exact information. The idea that tobacco smoke will frighten animals is to my mind ridiculous, the scent of man is so strong and persistent and carries such a long way and means so much to any animal, that it is bound to reveal his presence and cause alarm far more surely than the smell of tobacco smoke. Many hunters disagree with me on this point, but I speak from my own observations and sufficient experience to justify me in sticking to my point.

Stalking elephant in open country is easy, but in



*Photo* *Ma or A Rad ff D gmore*

A v d L one pho ographed n East Af ca Example of fla h ght quali y show ng no har h h gh l ghts o bla k hadow

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forests or thick bush there is always the danger of getting upwind of one or more members of the herd with results that may be most unsatisfactory or even dangerous. How an elephant will behave no man can tell with certainty; some will make every effort to get away, some will stand their ground ready to attack at the slightest provocation, others may attack without warning. The great beasts are highly intelligent, and have a strongly developed individuality, a fact not always realised by men who hunt them and have not had much experience. For the man whose nerves are in reasonably good condition and who is careful, I should say the elephant is probably the easiest and one of the most satisfactory animals to photograph. That there is a certain amount of risk I do not deny, but the results are well worth taking the chance. I have spent miserable hours in the midst of large herds when it seemed as though any moment might be my last, but I have also enjoyed many hours of seemingly peaceful security watching the great beasts at close quarters; the thrill of being among them was really wonderful.

Another of the larger animals that may be stalked with advantage is the rhinoceros. With reasonable care it is not as dangerous as some people imagine. The wind *must* be in the right direction, otherwise the foolish old creatures will either rush towards you or run away. Their eyesight is not good, but it is well not to trust too much to this, and no sudden movement should be made, especially across the sky line. Their keen hearing enables them to detect the slightest sound, so stalking should be done as quietly as possible. The question of whether or not the black rhinoceros charges with intent to kill is open to discussion. From my own experience I would say that it all depends on the individual animal. That

they will sometimes charge with evil intent I know, but I also know that they will occasionally come rushing towards men in a lumbering way as though aggravated at being disturbed and anxious to find out what is going on In the majority of cases, however, their one idea is to get away. To sum up the case, we can only say men have been killed by rhinoceros without provocation, and men have had to shoot at very close quarters in order, as they believed, to save their lives Care, therefore, should be observed in approaching these foolish and at times bad tempered two-ton monsters of prehistoric vintage To photograph them I advise stalking rather than working from a "blind," unless perhaps there is a water-hole which is likely to be visited with more or less regularity, otherwise it involves a discouraging amount of waiting Some rhinoceros make their home in the dense forests at fairly high elevations The thick cover gives them so great an advantage that I personally prefer to leave them alone, not only because they are likely to prove dangerous, but because the chance of securing good photographs is very small

Buffalo may be photographed by stalking, provided you have the necessary amount of courage It requires not only a good deal of nerve, but the greatest possible care and skill I know of no animal more dangerous or alert eyesight, hearing and sense of smell are developed to the highest degree, added to these forms of natural protection, they are extremely clever The fact that we see so very few photographs of them is significant in itself, and proves that camera hunters, in spite of their courage and enthusiasm, feel inclined to give the buffalo a wide berth No animal has ever frightened me so thoroughly, and I have yet to make the sort of photograph I would

like to have. I have stalked them in both open and forest country, and have tried working from a carefully constructed "blind." I have chased them and been chased by them, but the results have been small. That I have never been killed is only a matter of luck. But when all is said, they have taught me to respect them, and yet I long for the day when I may be fortunate enough to secure good photographic studies of the clever but vicious beasts.

Of other African animals that may be stalked with some chance of success, the giraffe gives perhaps the best opportunities. Occasionally antelope of various species and zebra offer themselves as targets for the harmless camera shots, but the results are usually more or less the same: just one or more of the animals either gazing intently at the camera or else running away. In any event, the results can seldom be compared with those obtained from a "blind," and this is particularly true when the moving picture camera is used

The first thing to do in connection with this branch of camera hunting is to select a place which offers some special attraction to the animals, such, for example, as a water-hole or a salt-lick Then there is the question of whether the animals are in the habit of coming by day or by night, and this can only be ascertained by careful watching. If by day, whether early in the morning or some other time, this is of the utmost importance, as the wind of the early hours is seldom from the same direction as it is later in the day, therefore the position of the "blind" must be chosen so that it is on the lee side of the water-hole or salt-lick during the hours when the animals will be most likely to come. If possible, I usually build a "blind" on both sides and change over from one to the

other according to the direction of the wind. This change must, of course, be made with care. Should any herds be feeding within sight of the water-hole, your presence will be discovered, and the chance of any creature coming will be small. When it can be arranged I like to enter my hiding-place before daylight ; if, however, this is not possible and there is any game in the immediate vicinity, I find it a good plan to send porters towards the animals in order to occupy their attention while I take possession of the "blind." The men, after circling round, return to camp while I remain to wait, watch and hope.

As to the construction of the "blind." The first point to consider is that it must not be conspicuous, it should blend in with its surroundings as though it were part of the landscape. Sometimes a thick thorn bush will serve as the nucleus if in the right position. A good "blind" can often be made by bending down the branches and securing them firmly, so that the usual strong wind which blows during most of the day will not release them; these, with perhaps the addition of grass or branches from another bush will, if properly arranged, make a perfect hiding-place. The inside must be carefully cleared to allow of free movement; pruning clippers will be found most useful for this, especially where thorn bush is used. The next task is to cut an opening which will give a clear field in order that the camera may be free to point in any direction and have absolutely no obstruction—one small twig may spoil an otherwise fine picture. Not only must the camera have a free view, but you also must be able to keep a look out in *every* direction: failure to provide for this is a frequent cause of failure. At the same time it is not advisable to make the opening any larger than is absolutely necessary. When the cameras

are placed in position, it is well to examine the whole effect from the outside to see that there is nothing to attract the attention of the keen-eyed animals. The person, when inside, should not show in silhouette against either the light background or sky, otherwise the slightest move would almost certainly be seen.

Some people use "blinds" made of cloth, but I am not in favour of them for work in Africa. Not only are they too hot, but with the high wind which prevails in open country the cloth is apt to flap in a most undesirable way. It is perhaps needless to say that bright metal which may catch the sun should be dulled, this can be done by painting with some neutral colour, the more irregular in tone the better. Everything must be noiseless, therefore hard substances that may be hit, even accidentally, should be covered with some soft material. I use rubber-soled footwear and place grass or a blanket on the ground as a precaution against unnecessary sound.

As working from a "blind" usually involves long hours of waiting, it is advisable to make oneself as comfortable as possible, as it is then more easy to be patient; light literature helps to pass the time, but it must not be of such an absorbing nature that it interferes with keeping an almost constant, keen lookout. Animals do not proclaim their coming, and it is of the utmost importance that they be seen before they are too close, so that everything may be ready and no sudden motions made.

Usually it is chiefly necessary to watch only more or less up wind. But failure to glance in all directions may have serious results. A rhinoceros may by chance come up wind after having got your scent; if so, it is just as well to be aware of the fact. Once when I was watching from a "blind" I learned a lesson that I have never for-

gotten Only by the merest chance I happened to glance down wind, what made me do so I cannot tell, for I never imagined that any animal would approach from that direction To my surprise I saw two fine lions deliberately stalking me It was about noon, and apparently the lions lunch time, and according to their idea I was to furnish the meal, to be lion s food not being one of my pet ambitions, I was puzzled as to what to do My instinct was to try to secure a photograph, but, as I was arranging the camera and fitting a suitable lens, the unpleasant fact was forced to my attention that time was precious—very precious, I might say By a strange stroke of luck I had brought my rifle with me, a thing I rarely took the trouble to do Photography being out of the question owing to the ever-decreasing distance between those lions and myself, I decided to indulge in shooting The rifle, a 275 Rigby Mauser, was pretty light for the purpose, and, as I had with me only five cartridges, the prospects were none too cheerful But my usual luck was with me and I still live, what might have happened had I kept a lookout only to windward no one can say, but I have a horrible feeling that the lions (there were three though at first only two showed themselves) would have enjoyed a meal of one harmless and very skinny camera hunter I only mention this incident to show how important it is to watch in all directions, and *not* go to sleep

Of the fascination of working from a "blind' volumes might well be written Many of the happiest days of my wandering life have been spent in blinds where, unseen and unsuspected, I have watched the various animals feeding, playing, sleeping and even fighting, just living their natural lives as though no human being

existed. Which animals have been the most interesting would be hard to say, as each has its own attraction; with elephant and buffalo there is the combined thrill of watching their behaviour, coupled with the possibility of danger, which, of course, adds its zest. With giraffe, which gave me one of the finest days I have ever known, there was the satisfaction of watching them actually drinking, while I secured what was probably the first really clear close-up film of this strange performance, something so rare that even that great old hunter, Selous, had never seen it. With this was the joy of watching at absurdly close range the beautiful and peculiarly African animal. One came so close that it fed on the leaves of my "blind," its head not four feet from my hand. All the antelope give pleasure; their beauty and grace is always something at which to marvel. Even the shy and unbeautiful wart hog is interesting. Against these African experiences there are the wonderful days spent in the wild wind- and snow-swept barrens of Newfoundland. I say days, because during the many seasons spent there only a few days produced results that were completely satisfactory, days when the beautiful caribou posed for their portraits, and let me watch them for hours at a time, frequently coming to within a few yards of where I stood trembling with cold and excitement. Sometimes my hands froze, so still did I stand, fearful that by moving I would frighten the timid deer. Not even Africa has given me more glorious moments. The Canadian Rockies, too, have furnished me with memorable days when working from a "blind" I have watched and photographed moose, deer, Rocky Mountain sheep, and even the shy marmot and rock rabbit. In that country the grandeur of the superb mountain scenery

adds greatly to the pleasure of one's work, and I usually selected places of particular beauty, so that I could paint while watching for my animal visitors. In this way no time was wasted and every moment was enjoyed.

The question of equipment is somewhat difficult to discuss. Each man has his own particular ideas, and some may resent suggestions. Many dealers in, or makers of photographic outfits, are more or less familiar with the chief requirements for this special branch of photography, and they may be able to give valuable suggestions; thirty years ago these men could have told you next to nothing. Cameras were made that, though suitable for ordinary work, were utterly useless for big game or even bird work. Field experiences gradually brought ideas to the manufacturers. Each camera hunter found out something of value, and with the combined suggestions we have to-day really efficient cameras.

For still photographs there is nothing better than the reflex type of camera, but it must have a long bellows and large front board to allow for the use of suitable long focus lenses. The telephoto is scarcely to be recommended; it is slow and difficult to use. It is better, therefore, to be content with a smaller image which is critically sharp and fully exposed, and trust to enlargement rather than the larger image obtained with the telephoto, which is seldom really sharp.

For moving picture work there are so many good cameras on the market that it is largely a matter of personal taste. The points most essential are that they shall be portable, simple, easily and rapidly loaded with film, be free from loose parts which may be lost, and be fitted with a good finder and focusing device, and last

but not least, be capable of carrying long focus lenses. This is of vital importance for animal photography. I use a seventeen-inch lens for much of my work; this obviously requires a suitable finder in order to keep the objects in the field. Using these long focus lenses in matched pairs gives good results, but adds too much weight and bulk to be really practical in big-game hunting. When the camera is hand turned, a very steady tripod is absolutely necessary. This should have the lever panoraming and tilting device rather than the annoying two-crank handles. In recent years I have been using a camera fitted with automatic drive.* This has everything to recommend it. Not only are the results more uniform (under keen excitement it is not easy to turn the handle with perfect regularity), but it allows a very light tripod to be used, even when employing a reasonably long focus lens; for instance, I use the cine-kodak tripod with a camera weighing over sixteen pounds, and fitted with lenses up to a focal length of twelve inches, and the results have been thoroughly satisfactory. Another advantage in using the automatic drive is that it leaves you free to make still pictures at the same time. This is of great importance where wild animals are being photographed, because you seldom have a second opportunity of even approximating the same subject or the same conditions.

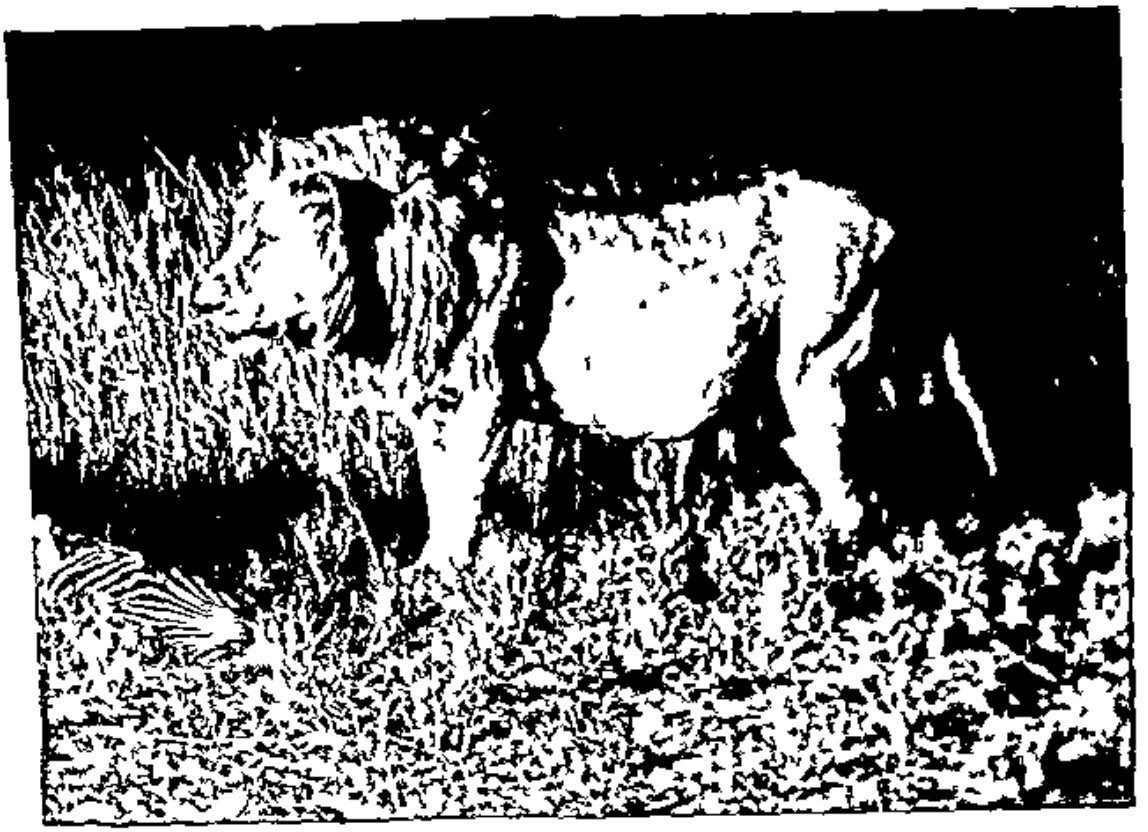
The question of the advisability of using very long focus lenses for cinematograph work is sometimes argued, even by experts. From my own experience (and I was one of the first to use them) I can say with confidence that, provided atmospheric conditions are reasonably good (heat, haze or mist are most serious handicaps),

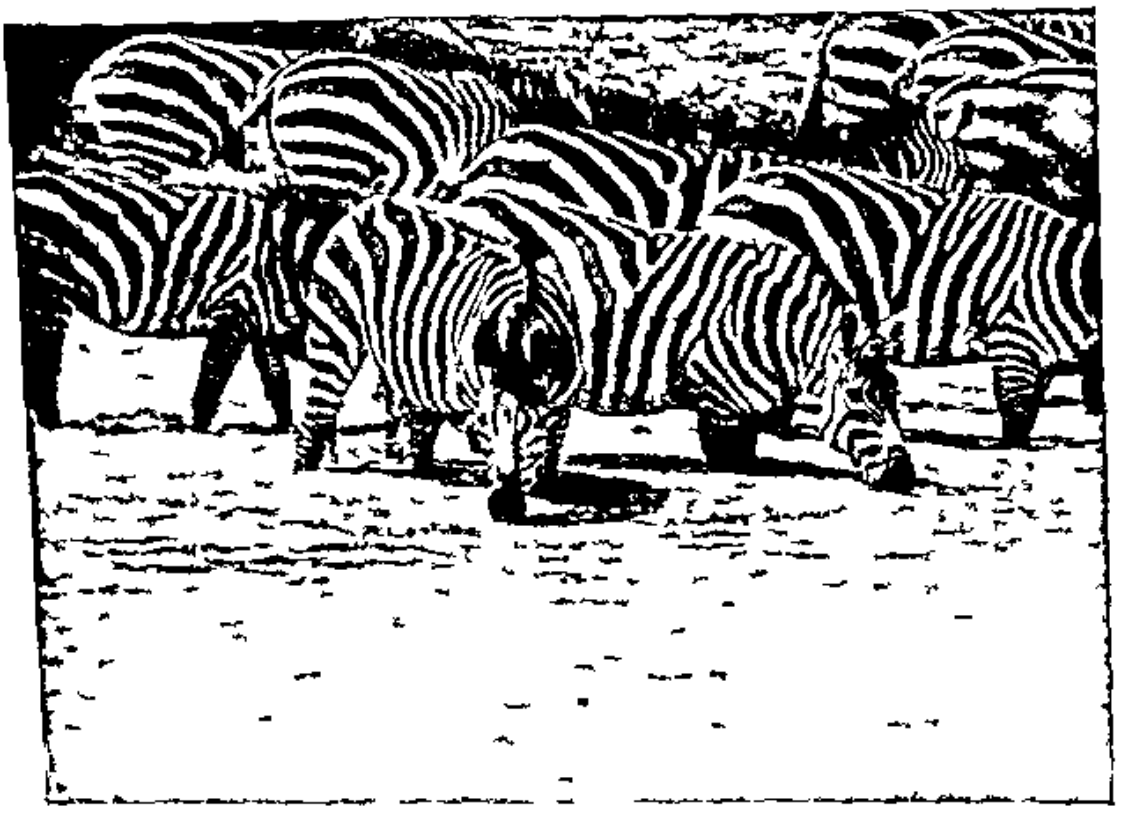
* The Newman & Sinclair.

there is nothing to prevent suitable lenses, such as the Ross telecentric type, being employed with results that are thoroughly satisfactory; definition should be perfect, perspective correct, and if the tripod is rigid there is no reason that there should be any shake. The large size of these lenses is their greatest drawback, but I am hoping that the time will come when new designs will overcome this objection, just as they have overcome the length between the lens and film. Where formerly a twenty-inch lens required the same distance for the length of the camera, now, of course, less than half the length of the equivalent focus is necessary. This has meant just the difference as to whether or not the long focus lens can be used for the "movie" camera.

Flashlight photography of animals is another branch of camera work that offers opportunities in the way both of sport and results. When I first went in for it we had to make our own outfits, for there was nothing on the market. I have even had to have suitable flash powder made for me. One had to be both ingenious and patient, to say nothing of hard working. To-day conditions are different; a complete outfit may be bought ready to use.* All that is necessary is to find the right place, and in a few minutes the simplified device is in position, and when the unsuspecting animal comes along, bang goes the flash and the picture is made. This automatic trip exposure method is all very well in its way if it is simply a question of securing photographs. But it lacks excitement; in fact, the only thrill is watching the plate or film develop. Perhaps a lion may appear, or perhaps a lowly hyena, if you are working in Africa. In North America it may be a graceful deer or even a skunk. In

* Such as the Nesbitt flashlight devices.





*Photos* *Major A Radclyffe Dugmore*

*Top*—Flashlight at 12 yards of a lion interrupted during a midnight banquet
This was the first really successful photograph of a wild lion ever made

*Bottom*—Wild Zebra drinking Enlarged from a moving picture film, 1" inch lens

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this uncertainty you have the chief pleasure. But if you are watching from a "blind," then excitement may run high, too high, indeed, at times. To crouch in your hiding place and strain your eyes when some slight sound breaks the stillness of the night is full of thrills. Gradually an indistinct form becomes faintly visible. Is it a buffalo or a lion? If so, will it come to the place on which the camera is focused? These and a hundred questions fill one's mind, till gradually the figure takes shape and perhaps it is only a skulking jackal, something on which it is scarcely worth wasting a flash. But, if it is one of the animals you want, how the blood tingles in your veins as you wait and hope, your fingers tremble as they hold the release, then, if luck is kind, the quarry approaches nearer and nearer until at last it comes within the range of the camera's eye. The animal assumes the pose you wish, your hand presses the bulb, off goes the flash with a deafening roar and blinding light, and you have your photograph if everything has worked properly. There is, however, always the chance that some unexpected defect will rob you of your success. It may be that moisture has condensed on the lens; if so, the picture will be flat and uninteresting. Strangely enough, this is one of the most common causes of failure, especially in northern countries or near water. To avoid such misfortune the lens should be wiped carefully with one of the anti-blur preparations which can be obtained from any optician. Dampness of the flash powder is another possible cause of failure, though with ordinary care it should never happen.

The question of selecting places to which animals may come is too complicated to deal with in this brief sketch of so large a subject. Whether you are working from

a "blind" or using set cameras, it is necessary to know something of the habits of whatever animal you expect to photograph. The more familiar you are, the better chance you have of success, but it is always well to remember that some animals will not come near anything that has been touched recently by human hands. Gloves do not always hide this scent; water sprinkled over the objects that have been handled is perhaps the best protection, but this is not always possible. For lions it is usually necessary to use bait. Lack of knowledge of the habits of the so-called king of beasts causes many failures and disappointments. The idea that a lion will eat only a freshly killed animal is entirely wrong. The best luck I have had was with a zebra that had been killed three days before. Spending the night within a few yards of this highly odoriferous carcase was somewhat trying, especially when the soft night wind blew towards our hiding place. I make particular mention of this generally unknown habit of the lion because so many people who have attempted this branch of photography think it is necessary to shoot a fresh animal for bait every day. Another useful point to remember is that the carcase should be securely anchored, otherwise it will be carried away, perhaps even before a picture has been secured. I would suggest that two or three cameras should be used, and connected so that the shutters open simultaneously when the flash is fired. In this way the animal is photographed from different angles; with luck the result may be a side, front and three-quarter view, and the chances are that of the three one will be especially satisfactory. If all three turn out well, so much the better, and the one model will have served your purpose to the utmost. Lions do not come very often, so when

they do honour you with their presence, it is well to make the most of the opportunity. Do not be afraid of using plenty of powder (most flashlight photographs are under-exposed) with a wide reflector to throw the light in the desired direction. Development must be done carefully, and not carried far enough to clog the high lights. This produces that only too common defect of chalky pictures which are far from satisfactory.

In some ways I consider flashlight photography to be as exciting as any form of big-game camera hunting, whether it is done from a "blind" or by stalking; for this latter method it is usually necessary to work from a boat; this is a favourite means of making pictures of moose and deer, and if carried out carefully will give really wonderful results. I know of few things more interesting than prowling silently along the shores of a lake in search of animals; keen eyes and ears are necessary to locate the quarry, for the creatures of the wilds do not advertise their whereabouts. Everything must be in absolute readiness. The slightest noise or movement may spell failure.

One of the features of all wild bird and animal photography is that it is not restricted by game laws. There is no close season, no limit to the size of your "bag," or to the size or form of the object to be portrayed. Insects, reptiles, fish, birds and animals, from mice to elephants, are all suitable subjects. If handled properly they will all yield pictures of beauty or interest, and perhaps best of all, the shooting with the camera leaves no bad taste. You do not suffer the feeling of regret that is almost bound to come when without reason a life has been taken just to satisfy a strange form of vanity.

## CHAPTER XIII

# The Photography of Marine Life

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etc., etc.

A WIDE field of interesting camera work awaits the Naturalist Photographer who cares to devote his attention to the varied forms of animal and plant life to be found between tide marks on the seashore, in the rocky tidal pools and the open sea. At the same time, it is not an easy line of work to take up, and the photographer must be prepared to face difficulties, discomforts and disappointments cheerfully, and with an enthusiasm born of determination to win through to success. Then he will find it a hobby of ever-increasing charm and interest, so diverse, so beautiful and so wonderful are the inhabitants of old Neptune's kingdom.

For simplicity the photography of marine life may be grouped under the three following headings, each requiring a different technique and apparatus: (1) The photography of those forms of marine life, plant and animal, to be found living on the seashore between high and low tide marks, and therefore exposed to view and accustomed to *living out of water for several hours* between tides; (2) the photography of the inhabitants of the large rock and tidal pools that can only be reached as

the tide recedes; (3) the photography of those forms of life only to be found beyond lowest tide marks, in the open sea, or on the floor of the sea; all forms that must be captured by means of special apparatus and kept alive in tanks, or photographed in the case of the bottom forms by means of a specially constructed submarine camera. Let us briefly consider each group and its requirements in turn.

### (1) Photographing Life on the Seashore

This is by far the best branch of marine life photography to take up first, as it will make you familiar with many extraordinarily interesting creatures, does not present such difficulties or risks, calls for no very special or costly apparatus, and with the exercise of a little care and patience will quickly yield encouraging results.

After many long years of hard practical experience, I have no hesitation in saying that for all photographing of living creatures, whether in the sea or on land, a Reflex camera is practically imperative if first-class results are to be obtained, for while the ordinary stand camera is quite suitable for photographing seaweeds growing in their natural environment, the tube-building worms, and some mollusca like the limpets, it is highly unsatisfactory where any moving object is concerned, on account of the uncertainty of the subject being critically in focus at the moment of exposure. There is no need to use a large camera, a quarter-plate ($3\frac{1}{4} \times 4\frac{1}{4}$) is the best size, fitted with a good lens of not less than seven-inch focal length, and working at an aperture of about F5. Lenses of higher aperture are very costly, and for our class of work of little help, for when working close up to the subject their depth of focus is so shallow that it will generally be

necessary to stop down to F6, F8, or F11, to obtain a satisfactory result; moreover, it should be remembered that the light on the seashore, even at midwinter, is always very much stronger than inland, making short exposures with a small lens aperture generally possible A good stout wooden tripod, not too long in the leg, is very necessary, no matter what form of camera you decide upon, as you will often have to work in positions where it will be impossible to obtain a good result with a camera held in the hand One golden rule you *must* always keep, and that is, directly you return from the shore to your rooms, to go over camera, lenses and tripod with dry cloths, carefully wiping away every trace of moisture, for salt water and the spray in the air have a rapid and most destructive effect on all metal work Personally, when working by the sea, I always keep an oily cloth with which daily to rub over all wooden and metal parts of my apparatus *Beware of the sand* It is all right on the shore, but will play the devil with your lenses, shutters, dark slides and plates if it gets inside your camera case !

Plates of medium speed, like the Ilford Rapid Chromatic or the Imperial S S Ortho, will yield the best results, as having a finer grain than the ultra rapid plates and being slightly more sensitive to yellows and greens When working where the rocks are of red or brown hue with much dark olive green and brown seaweed in the pools, a panchromatic plate, with a light yellow filter on the lens, should be employed A good big lens hood is a very desirable addition to the outfit, as wet sand and moist stones and shells often have a very disconcerting way of reflecting a beam of sunlight at an angle on to the front of your lens unless this is properly protected

So much for the simple equipment for shore photography, and now a few brief hints as to what to look for.

Every seashore has its own characteristic fauna and flora, its richness or otherwise depending upon the geological formation and the set of the tides, etc., etc. The ideal is generally a sheltered bay where the tide runs out leaving wide expanses of sand in which large rocks and pools abound. An entirely sandy shore may sometimes possess an amazing population, as, for example, the wide sands of Dymchurch Bay, Kent. The most hopeless is a shingle beach. Patches of sandy shore with much crushed shell will generally yield the best examples of the beautiful shell-binder worms' elaborate tubes that may stand up like a miniature fairy forest, each slender, shell-bedecked tube crowned by a branching arborescence; while where a certain amount of mud is mixed with the sand we may look for the less ornate tubes of other species. One of the most remarkable and handsome marine worms, the so-called sea-mouse (*Aphrodite*) will be found low down on sandy shores close to low tide mark, creeping over or in the act of coming up to the surface of the sand and making her way down to the sea. Then there are all the different molluscs that have their home between tide marks, creeping over the seaweeds, or attaching themselves firmly to the rocks. Crabs of many species have their home in the same situation, and hide away under flat stones, the protecting cover of seaweeds, or half bury themselves in the sand. A most interesting and valuable series of photographs might be made working from high to low tide marks along a shore, showing first the characteristic appearance of each zone of the shore, and secondly a series to illustrate the creatures and seaweeds peculiar to each.

The best advice of all is "use your eyes" With the exception, perhaps, of the insect world, nowhere else will you find more surprising and perfect examples of mimicry of form and colour; so that unless you educate your eyes to be ever on the watch, you will miss hundreds of interesting things.

## (2) Photographing Life in the large Rock Pools

For this work, which is best undertaken in this country during late spring, summer and early autumn, when the temperature of the water is not too trying, a bathing costume is quite a useful addition to one's outfit, as you may slip up and come down splosh, and it gives an added freedom to your movements in wandering and wading from one pool to another. A second tripod with a broad head on to which a small board to serve as a temporary table-top can be screwed, is very necessary; and with this a small glass tank about fifteen by ten by eight inches, safely swathed in a thick towel and packed into a stout basket. A small hand-net made of butter-muslin, for collecting and transferring to the tank living prawns, small gobies and other active inhabitants, completes this part of the outfit. One side of the tank at least should be fitted with a sheet of patent plate-glass, absolutely free from flaws of any kind, through which to take the photographs.

This is most important, because any unevenness of the surface will help to distort the image, and flaws such as are found in ordinary window glass will show up badly.

One of the greatest difficulties in photographing the sides and bottom of rock pools is caused by the polarisa-



*Photo* *F. Martin Duncan*

Sea Anemones

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tion and reflection of light from the sky by the surface of the water. Although not always very obvious to a casual inspection, it becomes more noticeable when we look at the ground-glass focusing screen, and later on we shall have an unpleasant surprise and disappointment on developing our plates, owing to the reflection having produced an effect rather like a veil of fog over everything, so that no object stands out sharply or with good contrast. There is only one way to get over this trouble, and that is to add to your outfit some form of semi-transparent shade that can be held or set up so as to cut off the sky from that patch of the surface of the pool at which your camera is pointed. Personally, I have had much success with a home-made cone-shaped contraption made out of thin laths and very thin calico, the small end of the cone fitting on to the front of the camera pointing downwards at an angle of about 45 degrees, and the bell of the cone just immersed at the surface. The best results will generally be obtained, if it is summer, when the sun is not at the zenith, that is to say, in the early morning and again in the early afternoon, not at midday. Provided you have some such form of shade to cut off sky reflection, very beautiful photographs of sea anemones, fully expanded tube-dwelling worms like sabella, and many other forms of life whose movements are regular and not requiring too quick an exposure can be obtained. The rapidly moving shrimps and prawns, and such-like creatures will, however, have to be caught with the hand-net and gently transferred to the small tank, which has been set up on the portable tripod table all ready for their reception.

Now here again a word of warning. A very little dirt or cloudiness in the water in the tank will show up badly

and quite spoil what might otherwise have been a successful photograph. Although in a permanent aquarium at home it is quite possible and desirable to have the bottom covered with a layer of clean sand, it will not be found suitable when working under the more or less makeshift temporary conditions that prevail at the side of a tidal pool. Our time is very limited when working low down close to the lowest tide mark, where so often the pools contain the most interesting objects; in fact, in such a position on the shore it is very necessary not only to keep in mind the truth of the old saying, "time and tide wait for no man," but also to keep a sharp look out, or you and your apparatus may be cut off from the upper shore, and unless you are able to swim, you will suddenly find yourself in a very uncomfortable, if not highly dangerous position. For this reason it is really a good plan to have a companion who will be willing not only to lend a hand in carrying part of the apparatus, but who can be depended upon to keep a watch on the tide while you are absorbed in your work. I urge this piece of advice seriously, from bitter experience and all too narrow escapes. When intensely watching your subject, it is so easy to become completely oblivious to the passing of time, and on some shores the tide comes in like a mill-race, completely surrounding you ere you have awakened to the danger of your position.

But to return to the contents of our tank. Having set up the tripod table, fill the tank with water from an adjacent pool, taking care in doing so not to stir up the sides or bottom of the pool, because it is of vital importance to have the water in your tank as clear and free from floating *débris* as possible. Then collect a few flat pieces of rock with perhaps some small fronds of red or green

seaweed attached, and carefully wash these by moving them backwards and forwards in a pool to get rid of all accumulated sediment; finally arranging them in position in the tank so as to make as natural a background as possible. When time presses, and you are anxious to obtain some kind of record, it is quite a good plan to have a stout sheet of glass cut to exactly slide inside the tank so as to form a temporary and invisible partition between the rocks and weeds and the front half of the tank which will be free for your shrimps and prawns, small fishes, or other creatures to move about in, and thus enabling you to keep them in view all the time. I must say, however, that if there is time to wait and watch and seize the right moment to make your exposure, it is very much better not to use a glass partition. For if your models are free to move about in all directions, they will more quickly recover from the alarm of transference from pool to tank, and as they swim or creep over the rocks and between the graceful fronds of seaweed will assume their natural and characteristic motions and postures.

Personally, I would rather devote a whole week to watching for and obtaining, with luck, perhaps, three or four truly characteristic photographic studies of real interest and scientific value, than a couple of dozen hasty snapshots of as many frightened creatures scrambling about the inside of the tank.

And now let me explain the reason for working with a tank right down among the rock pools, instead of having it set up right above high-water mark on the shore where there is no need to watch what the tide is doing. The reason is a very simple and at the same time a very vital one—all marine creatures are extraordinarily sensitive to any change in their environment, particularly to change

of temperature of the water and its oxygen content—I am speaking now of the creatures that live in the deep rock pools or in the sea below lowest tide mark, not of the shore dwellers, who are from their position accustomed to great variation of conditions every twenty four hours, therefore, if your models are to be healthy and natural, it is most important that the temperature of the water in the tank is the same as that of the pool, and also that it may be frequently changed to keep it well oxygenated and clear It is quite astonishing how quickly the temperature of the water in a small tank mounts up on a warm summer day It is for the same reason that small shallow pools which are fairly populous during late autumn, winter and early spring, become almost, if not entirely depopulated during the summer months

The Devon and Cornish coasts, from Babbacombe and Torquay on the south and Ilfracombe on the north, while farther afield, Tenby and parts of the coasts of Wales and the coasts of Scotland, are all good hunting grounds with their own characteristic fauna and flora

### (3) Deep Sea Photography

And now we must consider the work and equipment coming under the third heading or division of Marine Photography, namely, the photographing and collecting for photography of those forms of life that dwell on the floor of the sea and in the sea beyond lowest tide mark

To don a complete diver s dress, and descend to the floor of the sea, armed with a watertight submarine camera sounds exciting, but so far as round our British coasts are concerned, is a very disappointing experience, yielding very poor results, really not worth the consider-





*Pho os* *F Mart n Dun an*

*Top* —The Lesser Octopus (*El don*) attack ng a Crab
*Bottom* —The Common Octopus (*Oc opu vulga s*)

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able risk and expense entailed. I can quite believe, however, that in the tropic seas of the Pacific and also in the West Indies, much interesting and useful work is to be done with the help of the new diving helmet that Professor Bebee has used in some of his recent expeditions in those regions. Owing to the relatively high percentage of minute *débris* in suspension, and the position of the sun in the sky, light falls off very rapidly around our coasts as we descend below the surface of the sea, so that except at noontide on a clear midsummer day, one soon passes downward into a somewhat eerie, dim twilight, impossible for photographing moving objects; while one's own movements are very restricted and hampered by the dress, life-lines and air-tubes. Nor am I much enamoured of the results one obtains with cameras enclosed in watertight glass-fronted receptacles, lowered to any really appreciable depth out of sight, down on to the floor of the sea, for once they have passed out of sight you have no knowledge of what angle they are resting or pointing at on the floor of the sea, so that on developing the plate you may find a projecting rock or mass of sea-weed in the immediate foreground has completely blocked the view. I have, however, found such a type of camera capable of giving interesting results in shallow, brilliantly lit waters in the Channel Islands, the Bay of Naples, and similar situations, where one can more or less make out, looking down from the surface, with the help of an opaque skyshade held above one's head, what the conditions are and the position of your camera enclosed in its watertight jacket, as it rests on the floor of the sea.

But these are all methods really for the specialist probing deep into the biology of the sea, and therefore I pass on to the description of other fields of work where

into one of the pails or jars, the catch being sorted out when the net has been sent overboard again. For collecting from the floor of the sea you will require a naturalist's dredge or a small beam trawl. Don't be greedy. Be content to bring back only as many specimens as you think you can keep alive in the pails and jars until you have successfully photographed them. Don't let your store jars stand in the sun, keep them cool and change the water at the least sign of discomfort shown by the captive creatures.

Now with the conical surface-net you will at times capture very large numbers of quite small and extraordinarily interesting creatures, early larval stages of various species of crabs, barnacles and other crustacea, larval forms of marine worms, delicate fairy-like hydroid medusæ and other forms of life too small to be successfully photographed with the ordinary camera, but material which might well keep you busy throughout the long winter evenings, with the help of the simple low-power photomicrographic apparatus described in another chapter. The best way to preserve these small fry is to collect them all into one jar—a one-pound glass jar with a screw-on lid, such as honey is sold in, is just the thing—until the receptacle is nearly, but not quite half filled with them, and then add a little formalin to the sea-water, sufficient when the bottle is filled to make a 20 per cent. solution. Let it stand for a few hours, then pour off, and fill up again with fresh water to which formalin has been added, and repeat this twice at intervals of three or four days. Your specimens will then keep in good condition for several years provided the cork is well screwed down.

## CHAPTER XIV

# Low-power Microscopy for the Naturalist Photographer

By F Martin Duncan, F R.M S, F R.P S, F Z S, etc.

LOW-POWER microscopy should strongly appeal to the naturalist photographer, for it places within his grasp the ready means of recording permanently a vast number of small and beautiful forms of plant and animal life that otherwise would be passed unobserved on account of their diminutive size There is no need for costly high magnifying lenses or elaborately fitted microscopes, indeed, these are not the tools of the field naturalist, but rather the instruments of the laboratory research worker, investigating the ultimate cell structure of an organism The naturalist photographer's job is to observe and record to the best of his ability the external appearance of the living or preserved organism, work that in no circumstances calls for magnifications running into hundreds of diameters, but rather within a range of from five to twenty diameters, very occasionally rising to × 30 or × 50 I am convinced that the failure and disappointment on the part of many naturalist photographers who have attempted to wed microscope to camera has been caused by their striving after the im-

possible, so far as initial magnification is concerned; their inability to grasp the one fundamental fact that it is detail and detail alone that matters, that the higher the magnification the shallower the field of critical definition becomes, while the danger of distortion increases. A small image that is critically sharp all over will always bear considerable re-enlargement, whereas a partially sharp or woolly one becomes hopelessly out of focus when projected on the screen by the enlarging or optical lantern.

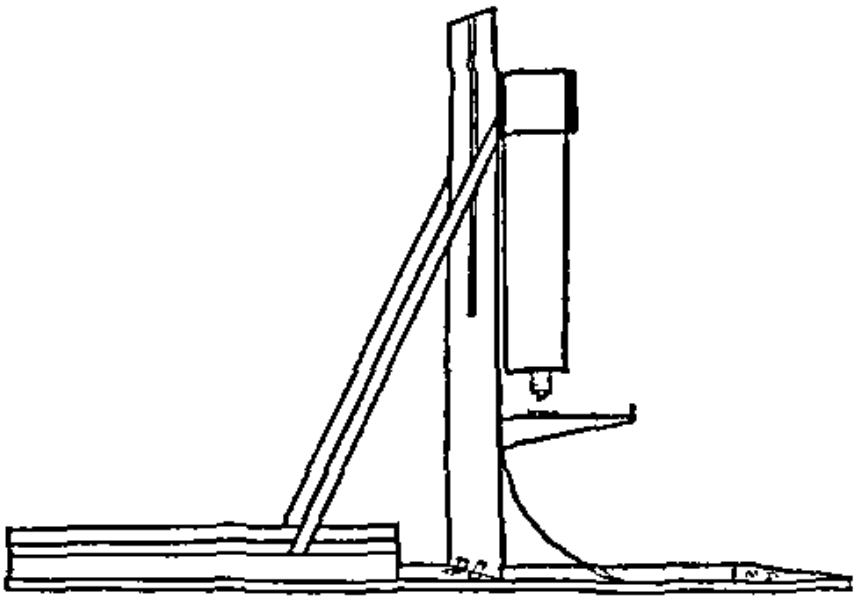
When I was quite a small boy, the late Lord Avebury, then Sir John Lubbock and an old friend of my father, presented me with a pocket-magnifier having two sizable lenses giving magnifications of five and ten diameters respectively. It was a gift which not only long remained a treasured possession, but one which opened up a field of unending interest and beauty, and helped to shape the whole course of my professional life and outlook. Even now I can vividly recall the thrill of pure joy that filled my heart on that particular half-holiday as I peered through my newly acquired magic glasses for the first time at a patch of wee flowers half-hidden in the short thyme-scented grass of a Sussex Down. Here, indeed, was fairyland revealed, dainty little pansy-like flowers, barely an eighth of an inch in size, yet every petal perfect in form and flushed with delicate bands of colour, a bouquet for Titania. The rest of that summer afternoon I can remember passed all too quickly away, and was fully occupied by watching sundry ants and other small insects, a collection of butterfly eggs that had been deposited on a near-by leaf, sundry tiny snail shells, and other small natural history objects that came within range of my magnifying glass.

To the naturalist photographer interested in the smaller forms of insect life, low-power photomicrography offers unending delight and useful work Few people outside professional coleopterists have the slightest idea of the extraordinary variety, beauty of colour and remarkable shapes of our British beetles, for instance; and this general ignorance is simply due to the almost minute size of the majority, which causes them to escape the notice of the casual observer. There are the delicately surface-sculptured eggs of innumerable species from each of the great divisions of the insect world, a host of minute members of the *Diptera* or two-winged flies, tiny *Ichneumons* or parasitic wasps that deposit their eggs beneath the skin of living caterpillars, numberless species of small moths, all awaiting the attention of the naturalist photographer

Now all this world of tiny forms of plant and animal life, whose hidden beauties stand revealed through a good pocket magnifying lens of × 5 to × 10, can never be really successfully photographed through a microscope, for the simple reason that the ordinary miscroscope objective has not the necessary covering power or depth of field It is only when you come to subjects requiring a magnification of twenty or thirty diameters and upwards, to show details of their structure clearly, that the microscope must be attached to the camera

How then are we to set about it? Well, it is not a very difficult or costly matter, and so far as the optical part of the outfit is concerned, not nearly so costly or troublesome as when I started doing such work more than thirty years ago First, you want a good rigid stand camera having an extension of at least eighteen inches, if it will extend to twenty inches, so much the

better. To carry the camera you will have to build a special stand, or get a local carpenter to make it for you. This stand consists of a baseboard to which is attached by wide hinges an upright board having a central slot cut out, and up and down which the tripod-screw attaching the camera can pass and be clamped at any point. One on each side of this upright board are placed movable



stays, which clamp tight against the sides of the baseboard when the upright is in the vertical position, and keep it rigid. At a point about eight inches from the base of the upright board, a pair of wooden arms, rather like a prolonged triangle in shape, are securely screwed, and these are to carry the sheet of glass or the board on which the object to be photographed is placed. As regards size, the baseboard of eight by one inch deal should be about three feet six inches in length, while the upright to carry the camera should be three feet six inches. The accompanying illustration shows clearly the construction of the stand.

Now as regards the optical outfit. Thanks to the demands of the cinematograph industry, there are avail-

able to-day a wide range of short-focus highly corrected anastigmatic lenses whose resolving powers are equal to those of the finest microscope objectives, and, because of their larger diameter, and being fitted with between-lens iris diaphragms, are infinitely more suitable for the work in hand

For our purpose there is nothing to be gained by the very costly large aperture lenses, those working at F4–5 will meet all our requirements, as the lens iris always has to be closed down to a varying extent, dependent upon the depth of the focus required If you can afford a battery of two of these short focus Ciné lenses, then get a three-inch and a two-inch , later you may feel inclined to try one of one and a half inch focus But it is best to begin with the three inch lens, and as you gain experience, try out the others

Now as these little short focus lenses are not of the symmetrical type, and are going to be used for the production of enlarged images of the original object, they must be mounted on the front of the camera, so that the back lens points towards the object to be photographed Really the object may be said to be in the position of a negative placed in the enlarging lantern for enlargement, *i e* , your lens is going to project an enlarged image on to the photographic plate

The most suitable and convenient base on which to rest the object to be photographed is a sheet of clear glass, say, ten by twelve inches in size, which is placed on the supporting arms of the upright stand , and beneath this can be placed on the baseboard white, black, grey or other suitably coloured sheets of card or paper to give the desired tint of background The advantage of the sheet of glass as a support is twofold , it eliminates all heavy





*Photo* *F Wart n Duncan*

*Top* —Sand hoppers
*Bottom* —A Brit h Sand W a p

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shadows cast by the object on to the immediate background, and enables the background to be changed without disturbing the object should greater or less contrast be desired.

And now, having assembled our apparatus, let us proceed to use it. Place the stand on a convenient-sized firm table, either in the garden, or close to a window giving good light from the sky. Extend your camera to about three-quarters of its entire length, and attach it to the upright. Place the object to be photographed on the sheet of glass and arrange it in position immediately under the camera. Open the iris of the lens to its fullest, and, watching the focusing screen all the time, gently unscrew the tripod screw, and without changing the extension length of the bellows, slowly lower or raise the entire camera, until the object appears fairly sharp on the ground-glass of the focusing screen; then clamp home the tripod screw, and make your final arrangements of the object and focus as sharply as possible, now using the rack-and-pinion of the camera, and, if necessary, closing the iris until the best focus is obtained. Working with the three-inch lens, the distance between the lens and the object will be between two and three inches, depending on the length of extension of camera used. A very useful and inexpensive addition to the outfit is what is known as a microscope bull's-eye condenser, which consists of a single plano-convex lens of about two inches diameter mounted on a jointed arm attached to a solid heavy metal base. By means of this it is easy to concentrate a beam of light from a white cloud on to the object and so help to shorten the exposure considerably.

If you cannot work by daylight, then it will be neces-

sary to rig up a small artificial lighting system, which will not be very elaborate or costly Indeed, two twenty-five c p half-watt gas filled electric bulbs surrounded by white tin or cardboard reflectors, and placed quite close to the object, one on each side, will be found to give quite an efficient system of lighting, and if panchromatic or studio plates are used, the exposure necessary will be halved

With the two-inch focus Ciné lens attached to your Reflex camera by a tube six inches long and two inches in diameter, lined with black velvet to cut off all reflections, quite a lot of successful 'Pond Life' work may be accomplished at a magnification of about × 4 In this way I have obtained dozens of successful photographs of living hydra, daphnia, rotifers and other small pond and rock pool dwellers In all this work your aim must be to employ only that amount of magnification which will enable you to register on the photographic plate the maximum amount of sharply defined detail If you have a crisp, sharp negative image, then the enlarging lantern will give you all further magnifications—*i e*, increase in size—necessary

And now I must say something about the use of the microscope in conjunction with his camera by the naturalist photographer The same stand camera as employed with the short focus Ciné lenses can be used, provided you have a baseboard long enough to carry the camera fully extended, the microscope bent over into the horizontal position, and the source of artificial light, that is to say, a baseboard of one by eight inch deal about five feet in length Of course, if you are going to confine your work very largely to opaque objects, then you will do better to start with the microscope in the vertical

position. In which case, all you have to do is to place the microscope on the base of your existing vertical stand, and by means of a tube and velvet sleeve make a light-tight attachment between the microscope and camera.

The choice of the microscope is important, and, in the first instance, provided you have made up your mind that you are going in for this branch of work really seriously, I would advise purchasing the best stand you can afford, leaving the optical equipment to be added to as occasion and opportunity arise. The microscope stand most suitable for photomicrography must be of solid and rigid construction; the body tube must be of large diameter to permit of use of micro-objectives of the Leitz Micro-Sumar or the Zeiss Planar type. It must be fitted with a good mechanical stage, preferably built into the stage as an integral part thereof. It must have a rigidly built centring sub-stage. It must be perfectly rigid when the body is in the horizontal position. Such microscopes will be found in the lists of our best British firms, such as Messrs. Chas. Baker, Ltd., Messrs. R. & J. Beck, Messrs. Swift, and Messrs. Watson & Son, Ltd. A really first-class British-made microscope is, I am glad to say, still an infinitely superior and more convenient instrument to anything yet turned out by any Continental maker. The Continental model may be more compact in appearance and cost a little less, but it is not going to give the comfort and ease of working or the rigidity of an English first-class research stand. For forty years, as student and research worker, I have had microscopes in almost daily use, so that my opinion is based on hard, practical experience; and during that time I have had opportunities of testing out in the laboratory Continental and British stands by all the leading makers.

Now a few words of advice as to the optical equipment The sub-stage condenser should be an achromatic of 1 N A , constructed so that the front lens can be removed and the back combination used when low-power objectives up to the half-inch are being employed For a start you will want two eyepieces or oculars, and these will depend upon the objectives you are going to employ, whether achromatic or apochromatic So good are the best of the modern low-power achromatic objectives, that it is really only when one has to undertake high-power critical research work that the more costly apochromats call for consideration It is as well to purchase your oculars from the same firm as your objectives, as they will have been computed for use with the particular make of objective you decide upon , a × 5 and a × 10 or × 15 will be most useful As regards the objectives, I would suggest three powers, namely, a one and a half inch, a two thirds inch and a half inch Trouble is often caused by reflections inside the draw tube and the body tube of the microscope, and therefore, when purchasing your stand, be sure to ask the maker to permanently line both tubes with black velvet for you It is important to have both tubes lined, because when taking a photograph without an eyepiece—and you will often have occasion to do so—the draw tube into which the eyepiece fits should be unscrewed and removed, so that advantage may be taken of the wider body tube which will give you a field of greater diameter

We next come to the important question of illumination, and this, of course, will be governed by whether you have electric light available, either from house supply or a motor generator If you live in the country and are dependent on oil lamps for your artificial light, then you

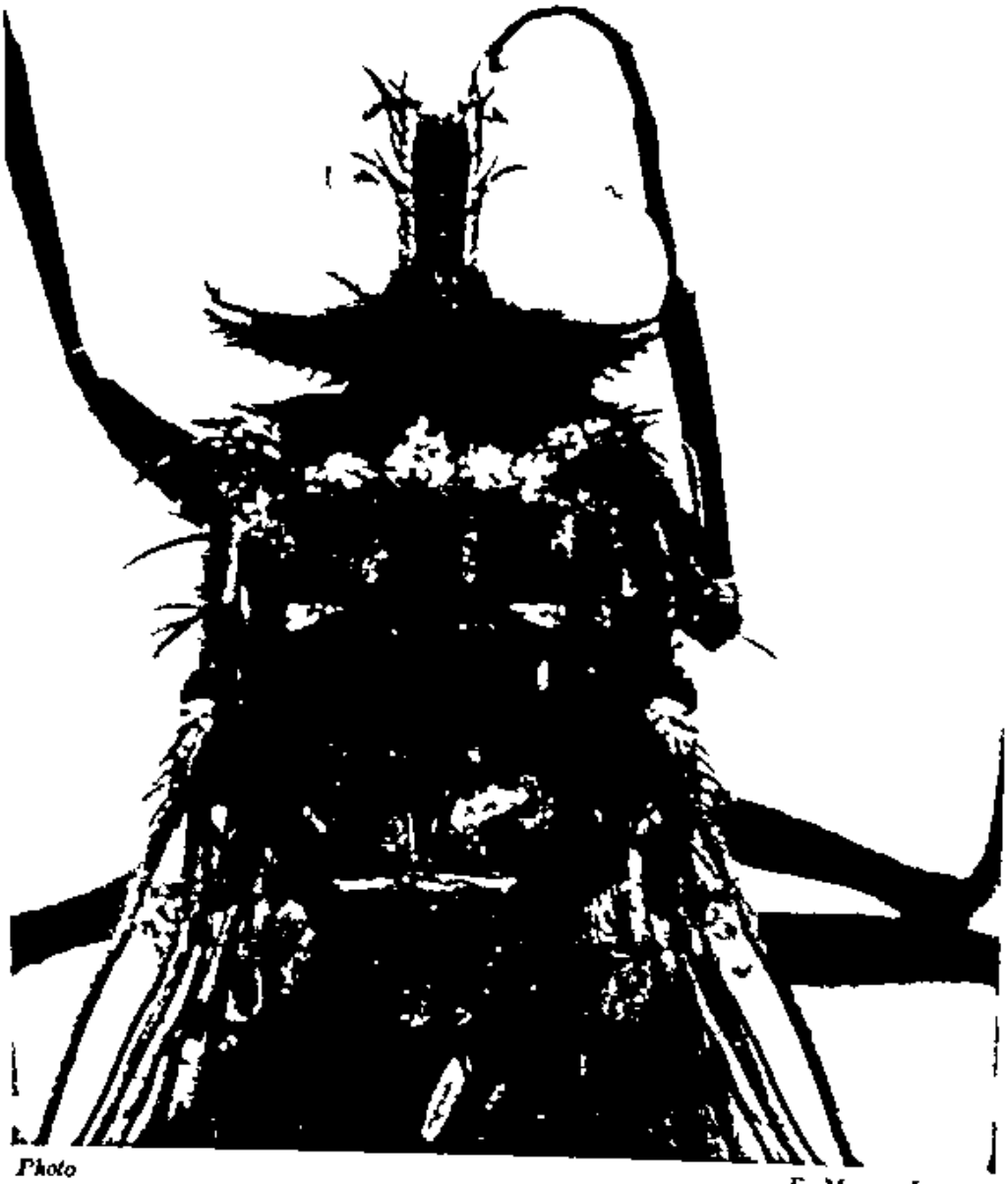


*Photo* *F Ma n I uncan*

Head and Thorax of the Hou e 9

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will have to adapt one of the oil-vapour lamps which burn with a mantle in place of a wick. For several years I used with great success a spirit-vapour lamp and a petrolite lamp of this character, the chief trouble being heat, and, of course, a longer exposure than with electric light. All the leading firms of microscope makers now list electric lamps specially designed for photomicrographic work, so that there is no need to enter into details here, except to advise the purchase of a filament, or a tungsten "pointolight" type, rather than any form of arc lamp.

If you are only working at low magnifications, say × 25 to × 35, with opaque objects, quite good results can be obtained with an outfit consisting of a couple of thirty-two c.p. half-watt lamps and two bull's-eye condensers. I have taken dozens of photomicrographs of seeds, parts of insects, eggs of *Lepidoptera*, *Foraminifera* and the like, with such a simple and cheap arrangement, using the vertical camera stand already described, and the microscope in the vertical position. It is the ideal method for recording the natural external appearance of small forms of plant and animal life that are too minute to be revealed by the very low magnification obtainable with a short-focus Ciné lens.

Into the methods of taking photomicrographs of semi-transparent objects, such as stained sections of plant and animal tissues and the like, I do not propose to enter here, as they would require far more space than there is at my command, if to be dealt with adequately; and, as stated at the commencement of this chapter, it is work that really lies rather outside the domain of natural history photography, which has essentially to do with the photographing of the whole organism, and the recording of its general external appearance and character.

## CHAPTER XV

# The Photography of Plant Life

By E J Bedford, F R.P S

THE photography of botanical subjects, such as trees, plants *in situ*, flowers, etc, is a branch of work that will provide endless attractive subjects for the nature photographer

Some who may not have given the matter due consideration will be inclined to say, perhaps, that this work is comparatively easy compared with the photography of birds

While admitting there are not the same difficulties to contend with, there are other difficulties more particularly connected with this kind of work which will call into play all the faculties of the photographer The translation of the beauty and delicacy of many of our wild flowers and plants into a monochrome representation is no easy matter The conditions under which the majority of the subjects are taken require a full exposure, and movement due to wind is a factor which has to be taken into account True, plants cannot fly away like birds can, but for all that they are continually in movement—apart from wind trouble—from the time they appear above ground until they cease to exist This movement is a very gradual one, but nevertheless it exists Those who essay botanical subjects will therefore require a full stock of

patience—which every nature photographer must possess more or less—to obtain successful results. For the flower photographer, "the primrose by the river's brim" will be something more than a primrose to *him*.

It will be a severe test as to his capabilities in rendering one of our common and popular wild flowers in its true relation of colour values. If he succeeds he will be conscious of success where many others have failed.

Before giving a few hints for work in the field, the result of some years of experience, perhaps a few remarks about apparatus will be found useful. The camera will be the first consideration, and the same instrument that is used for other nature work will no doubt serve. Two points of importance are that it should be capable of being used on a stand and should have a full-sized focusing screen upon which the subjects may be arranged before exposure. The second point is that it should have double extension; at least twice that of the focus of the lens employed.

If the photographer proposes to obtain a new camera, the two sizes I particularly recommend are postcard, five and a half by three and a half inch, or the popular three and a half by two and a half inch size. The former will produce contact prints of convenient size, and is not too heavy for outdoor work. It can also be adapted for stereoscopic work by fitting two lenses and a septum. It will then be available for a negative postcard size or two stereos on the postcard plate. This is the type of camera I use myself for nearly all my botanical work, and the majority of my negatives are stereo ones. One stereo half makes a very convenient size for contact lantern slides, and the full plate is very suitable for plants *in situ*.

The three and a half by two and a half inch size is

deservedly popular on account of its lightness and portability The comparatively short focus lens fitted can be used at a large aperture, and will give good depth of field Enlargements can be made from the negatives to practically any size, and lantern slides made by contact

With regard to lenses, little need be said, beyond the usual good advice to get the best one can afford In botanical work there is not the need to use expensive large aperture lenses, such as are useful at times for bird photography, because in order to obtain good depth of field some stopping down is necessary A lens working at F6 5 or even F8 will do all that is required It is generally necessary to stop down to F11 or F16, and sometimes even more for outdoor work.

As our subjects will not run away longer exposures are possible than in bird work, the only necessary attribute being patience

A useful kind of shutter is one that will permit of a 'bulb exposure This is a valuable help in allowing intermittent exposures in case of wind Care should be taken, of course, to see that the period of exposure is as short as possible, or the plant or flower may have altered between the interval

The botanical worker should be provided with a stand that will admit of placing the camera very close to the ground Many subjects will be on the ground and only a few inches high, and a stand at ordinary height would be useless The stand I use folds, and has also adjustable legs so that it can be used about a foot from ground level A light and convenient form of tripod for this work is one of the collapsible metal ones which can be used closed up, being then very rigid Being light in weight, it may be carried in addition to the ordinary tripod A tilting



*Phot* P m o *E J E d ord*

[*Fa ng pag* 170

board is a useful addition to the tripod. It allows the lens and camera to look down upon a subject close to the ground without tilting the tripod, and is more convenient and safer.

It goes without saying that for the majority of subjects, panchromatic plates or films are necessary, and it is wise to use them always. At one time I was persuaded from using them on account of having to develop in darkness, but have now got over the difficulty by using the Ilford desensitiser and actually use a brighter light now than that used before with ortho plates. The quality obtained from a panchromatic emulsion is infinitely superior to other kinds both in the rendering of tone values and gradation. Used without a filter, they will give a better rendering than an ortho plate and filter and with a K1 or K2 filter will give the best corrections obtainable. It is well to bear in mind also that a panchromatic plate and K2 filter requires only about three times normal exposure whereas an ortho plate with the same filter requires from eight to ten times normal exposure, and then the result is not so good as the panchromatic plate.

Do not be afraid of exposing two or three plates on a good subject. It pays in the long run.

Always carry and use an exposure meter; one measuring the strength of the light. Only very experienced workers can afford to do without, and they generally use one—*verb. sap.*

A few practical hints may be useful for those who have not had much experience in this class of work.

I generally prefer to work in a diffused light rather than to have direct sunlight upon the subject. There may be times when a strong light is necessary, but as a

rule the thing to aim at is delicacy and softness rather than strength and heavy contrasts Strong sunlight is not conducive to this end

It is very seldom that one finds a subject exactly right for the camera Even human beings usually require a little "touching up" before they are willing to face the camera, and it is the same to some extent with plants

Usually it is necessary to do a bit of "trimming," either to isolate the specimen a little from its surroundings or to remove distracting features which are not necessary for the general truth of effect, and would only mar the final result Always keep a sharp look out for spotty high lights or shining leaves, etc., especially in the background These, if neglected, often assert themselves in the print far more than they appeared to do in nature It is much better to remove them before exposure, if possible, than to try to spot them out on the negative or print Such retouching is rarely satisfactory, and a little time spent in carefully arranging the subject *before* exposure is well worth while

Do not on any account go to the other extreme and manufacture so-called improvements Some years ago a well known photographer of flowers and foliage was heard to remark that he made up his subjects On one occasion he actually received an award for a photograph which contained the flowers of one species and the leaves of another ! One does not know who deserved the greatest blame, the photographer or the judges!

Some workers carry an artificial background for use in taking a plant *in situ* Personally, I do not care for this, and never use one When photographing a plant *in situ*, the natural background is best, and if this cannot

be made satisfactory, I prefer to carry home a specimen or two and photograph them where they are under control.

Some species are better adapted for home-work than in their natural habitat. In that case I generally use a large white mount as a background, and by simply altering its angle to the source of light the tone can be varied at will. As a rule, the most successful result is a tone intermediate between the highest lights and deepest shades of the subject. But it is here where the artistic taste and experienced judgment of the photographer will be of value in coming to a final decision.

Another useful tip is to avoid placing specimens photographed in an ordinary room too near the window. This causes harsh results and apparent under-exposure. The same length of exposure given to the specimens when they are two or three yards from the window will give a much better result. A sheet of white blotting paper makes a good reflector. Specimens brought home to photograph should be carried in a vasculum, otherwise they will fade and not arrive in good condition. On arriving home, place them in water; before doing so cut a small portion from the end of the stalk so that they can take up the water easily. By the following day or so they should be in a suitable condition for operations.

Specimens photographed when they have been allowed to wilt do not give the correct impressions of the originals. Specimens out of water will commence to wilt at once, and attempts to portray them in this condition will only result in failure due to movement during exposure. In arranging specimens at home, do not make the mistake of including too many. The simpler the grouping the

better, and a little time spent in trying several different ways before making the final exposure will be by no means wasted.

In the field, remember that not every specimen of a plant is suitable for the camera. One has to pick and choose, and if, after looking at the subject on the ground-glass screen from several points of view, it does not compose satisfactorily, leave it alone and look for another. There is one period in the life of a plant when it is at its best and when its principal characteristics are exhibited, and that is the time to take its portrait.

In the early part of this chapter I said botanical work had certain difficulties peculiar to itself. One of my own experiences will serve to illustrate my meaning.

Wanting to obtain the photograph of a Maiden Pink (*Dianthus deltoides*) *in situ*, the locality was visited when there were a few specimens of this delicate little annual in flower. Having selected a suitable one, the camera was erected, and everything made ready for exposure. But it was a windy day, and I have noticed that the wind often blows when wanting to photograph a plant outdoors! The time was afternoon, and thinking later on the wind might drop, sat me down patiently beside the camera, enjoying the prospect. By-and-by the wind had dropped a good deal, but where was my specimen? To my astonishment it had disappeared! I went up to investigate and found that it was closing time, and the flower had closed up and appeared like all the other pieces of grass around it. I had to give up my photograph for that day, but had learnt something.

A few days after, another opportunity occurred. It was a still day; in fact, the sultry air seemed to portend thunder. Having arrived at the locality, a journey of



*Photos*

Black Mulle n



*E. J. B dford*

Fr t of Wayfar ng Tree

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some seven or eight miles, the camera was erected, and even then thunder was heard rumbling in the distance. Evidently a storm was quickly gathering, and it was a question whether to remain and make the exposure and probably get also a soaking, or at once make for shelter more than a mile away. I decided to take my chance, made a couple of exposures, hurriedly packed up my apparatus, and set off post-haste for the nearest shelter, reaching cover a few seconds before a heavy thunder-storm broke over the district with drenching rain.

Had one been a bird photographer tucked away in a small but comfortable hiding-tent one might have defied the elements so long as the tent was waterproof!

Remember the golden rule: Expose for the shadows and develop for the high lights. Do not over-develop your negatives. Many botanical subjects (and, for the matter of that, other natural history photographs as well) are ruined by under-exposure and over-development. A harsh negative is the result, which will not produce a print with proper gradation and half-tones.

Botanical work will permit of the use of the camera all the year round. Every season presents fresh subjects. In the winter the bare branches of the various trees show to perfection their anatomy and character. Springtime heralds the opening buds and leaves. Late spring and summer has a wealth of blossom, more than enough to satisfy the most prolific worker, while autumn gives us a varied and decorative series of wild fruits which can be made into charming studies.

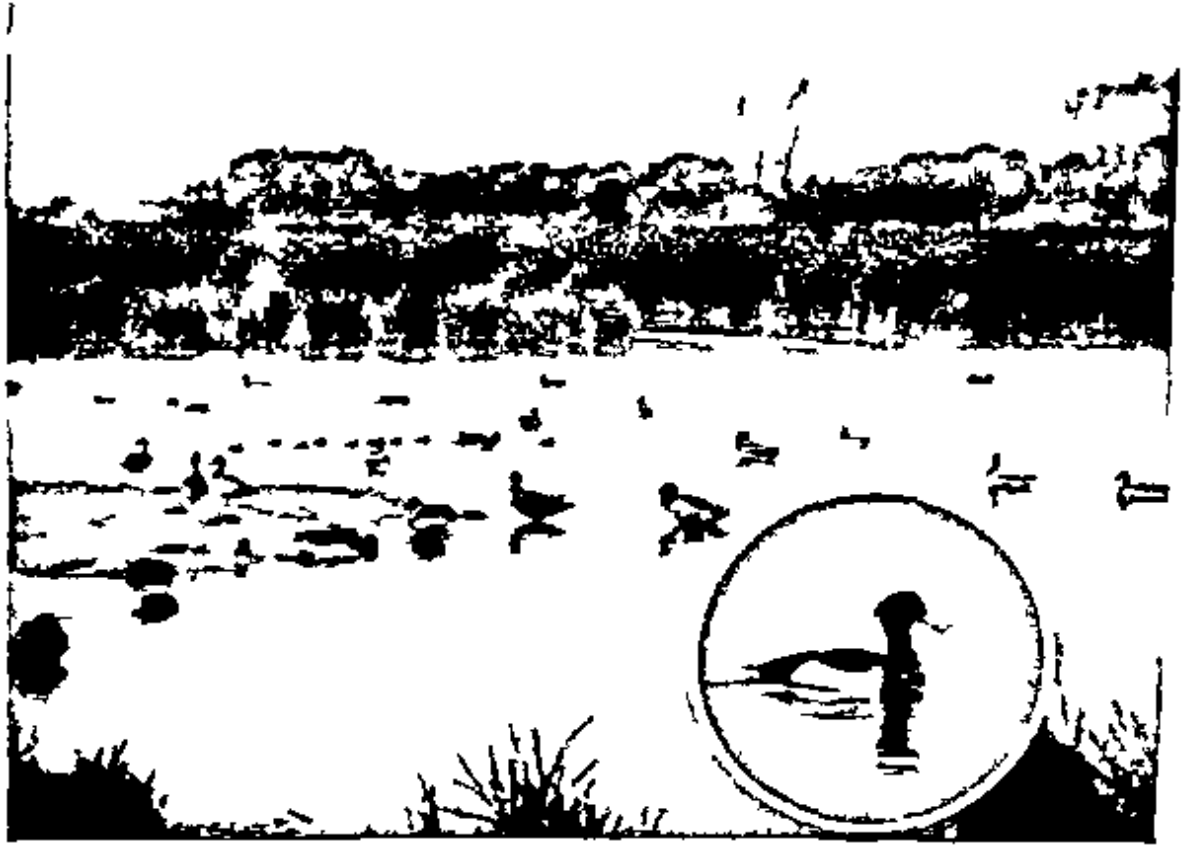
To sum up, let me quote the old herbalist Gerard, who, in 1597, wrote:

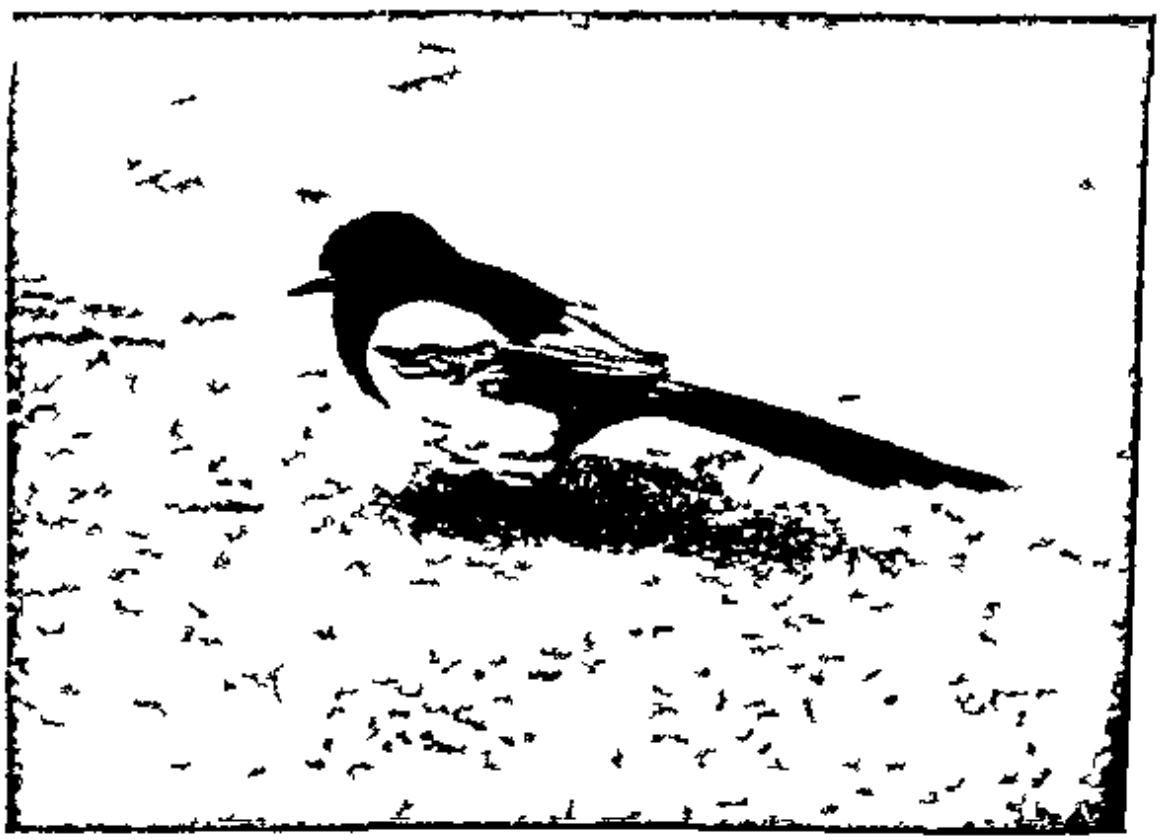
"There is nothing more pleasant and full of delight than to wander over woods, mountains and plains,

garlanded and adorned with various most faire flowers and to stedfastly gaze upon the same"

Had photography been in existence in his day he might, and probably would, have added—

"and to record their beauty by means of the camera'





Examples of wa t and see photog aphy

*Top.* A corner of a c eek.

*Inse* Tuf ed Duck

*B tom* Magpie

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## CHAPTER XVI

# Waiting and Watching

THERE is a branch of nature photography which has been called "wait and see" photography, and, for excitement and interest, it is well worth trying The majority of nature workers are content to fix up their apparatus in front of a nest, or in some other place where there is a bait to attract their subject, but with "wait and see" photography, you select some spot in the country where there is a likelihood of the wild creatures gathering, then with your camera and yourself safely ensconced in a well-camouflaged hide, you wait for something to turn up A small pond on the outskirts of a wood is an excellent point to watch, for in such a place numbers of birds come to drink and bathe

For this work quite the best apparatus to use is your reflex camera, but another kind of finder should be fixed The usual hood on the top of the camera is removed, and in its place you fix another in the following manner Another mirror at an angle of forty five degrees is placed above the ground glass screen on the top of the camera, this is enclosed in a small case as shown in the illustration of my "Birdland" camera, and in the front of this a magnifying lens in a focusing mount is fixed The camera is fastened on a tripod with a universal head so that it may be moved in any direction, and it is a great advantage if a pistol grip is fixed under the back of

the camera so that a firm grip can be obtained as it is moved With this finder the photographer is on a level with the camera, and his hide is considerably smaller than if he had to stand over the camera to look into the usual form of hood Messrs Dallmeyers will fit such a hood to their naturalist s camera, and the photographer having once used it will not return to the upright hood fitted to the top of the apparatus The periscope is a most useful adjunct when waiting in a hide for this work , it can be fastened to the camera, with the eyepiece close to the magnifying lens of the finder, and, by arranging it in this way, the photographer is able to see all that is going on around as clearly as though he was standing outside his hide, and directly any wild subject appears he can shift his eye to the finder, focus quickly, and make his exposure It is here that the silent shutter is such an advantage, for after having made one exposure the plate can be changed and another photograph obtained, whereas, if the shutter makes enough noise to scare the bird or mammal away, it will not return again If it stays to bathe or drink, and is not frightened by any noise, others will soon join it, and if the photographer is lucky in finding a suitable spot, it is surprising what a number of interesting pictures may be obtained

I have waited in all kinds of likely places sometimes I have had a successful day, at others times drawn a blank, but it is the uncertainty of the work that makes it so fascinating My wife, who has given me such valuable assistance in my photographic work, once helped me to construct a punt which we thought would be useful for stalking birds on the open water We certainly got a lot of good fun out of it, but we found that manipulating a boat and trying to use a cinema camera at the same time



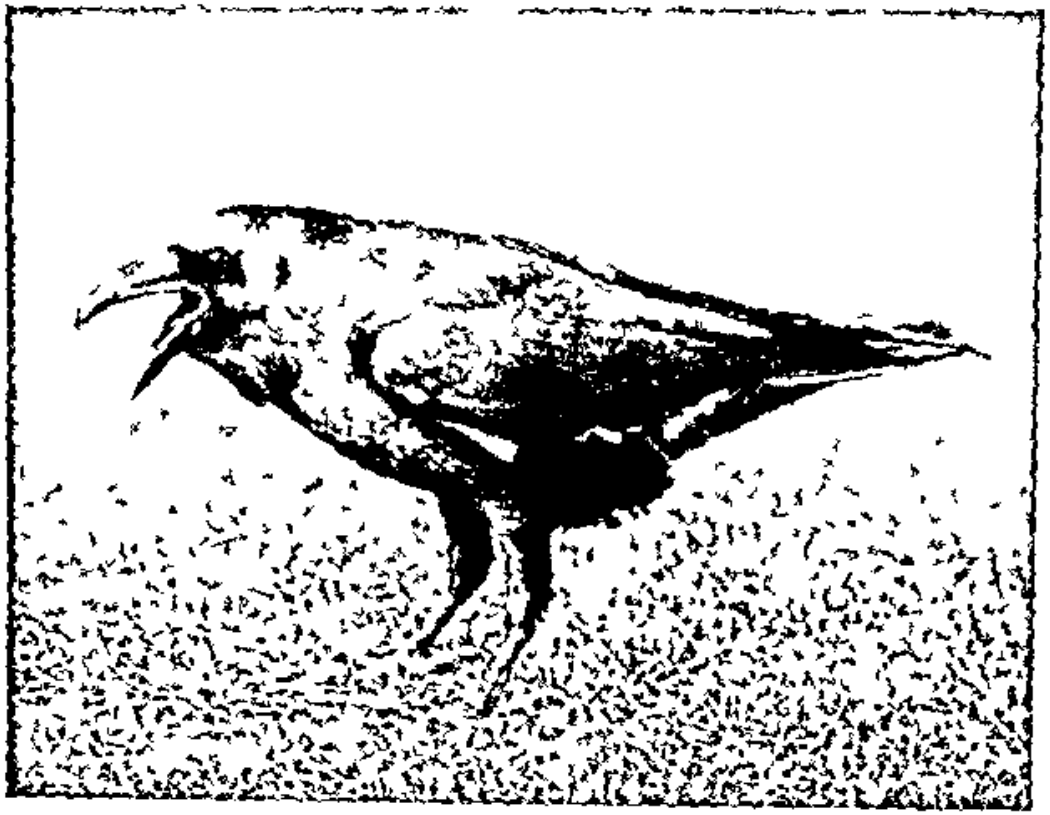
Whitethroat

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was rather a difficult undertaking, for there was only room for one person on the small space on the punt. We were, however, able to get near some of the birds found on the water; and at a short distance, the punt, camouflaged with reeds, looked exactly like a little floating island as it moved over the lake.

An excellent place to fix up a hide for "wait and see" photography is near a small creek on a large lake, especially if it has tall reeds on its sides. Such a spot, if it is well sheltered from the winds, will offer good sport to the nature photographer. I know one such place on the borders of a Hertfordshire lake, and on two or three occasions I have used my hide of hurdles covered with reeds. One summer day I had the following birds within photographic range and obtained some interesting photographs: mallard, tufted duck, pochard, shoveler, moorhen, coot, great-crested grebe, turtle dove, chaffinch and sparrow. During the several hours I spent in my hide, birds were before me all the time, and by using lenses of varying focus I was kept quite busy. I was amused by the wild ducks; I noticed that if they left the reeds, the drakes always allowed the ducks to reconnoitre before they ventured far from shelter, and when I had finished my photography, and showed myself outside my hide, the drakes were the first to leave, while the more inquisitive females remained behind for a moment or two to investigate.

Every motorist must have noticed that the wild creatures of our countryside take very little notice of a motor car. Sometimes when travelling along our roads I have passed right over a bird feeding in the road, and on looking back have seen that bird continuing to feed as though nothing had happened! But thousands of



Carrion Crow

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miles I have come across many fascinating things connected with our wild creatures.

In another part of this book I describe a camera that I constructed in which all the movements necessary to focus and expose a plate were done from the back. I found this a useful camera for "wait and see" photography, and during one afternoon obtained several photographs of shovelers and tufted ducks. The two best photographs that I obtained on that occasion have brought me in over six pounds, so it was well worth while spending just under three hours in my hide. The nature photographer should always carry a camera with him when going through the country, for one never knows what is likely to crop up.

Photographs of our wild animals obtained away from their lairs, nests, or bait placed to attract them, will always attract the notice of editors on the look out for something novel. Lectures and books on the habits of our wild animals have made the public familiar with photographs of them feeding or attending to their young, and there are so many taking such pictures, that unless something very outstanding is obtained, there is not a flourishing market for them, as there was in the early days of nature photography. However, if the nature photographer can obtain a striking picture of a bird away from its nest, or of a mammal not attending to its young, there is always more chance of obtaining a good price for it.

## CHAPTER XVII

# Photographing Nests *in situ*

THE photographing of nests in their natural situations offers a wide and remunerative field to the nature photographer. There are many who cannot give the time to bird photography owing to the large amount of time spent in waiting, but the bird-lover who is also a photographer can obtain a pleasing set of pictures by securing records of the nests and eggs of the birds to be found in his or her locality.

The best camera for this work is a half-plate, with the front fixed, so that the focusing is done by racking out the back. It is very annoying, after spending say an hour in getting the camera in position, to find that it is necessary to move farther away, yet this often happens with a camera that is focused by racking out the front, for with each turn of the focusing knob the lens is carried nearer to the nest. A fairly strong square bellows camera, with the front fixed, and possessing a good swing-back, will give the best results. A lens of about seven inches focus is a suitable one to use ; it is not necessary to have a modern rapid one, a good second-hand double lens working at F8, which can be picked up for a few shillings at the second-hand dealers, will give excellent results.

Nests of common birds in difficult places should not be attempted; a careful search in the countryside will



Nest of Song Thrush



Nest of Lesser Redpoll

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eventually give the photographer good opportunities to obtain satisfactory pictures of these, for very attractive pictures can be made of nests if the photographer uses his artistic sense in placing the camera in the right position, and uses judgment in arranging the scene upon the focusing screen of the camera. It is seldom advisable to get the nest right in the centre of the plate, and care should be taken not to get the camera so high over the subject that in the finished print it looks as if we were looking down upon the eggs from directly above. If this is done, the whole nest looks flat, and does not give any idea of its construction and shape. If a nest of the song-thrush is taken from immediately above, it gives no idea of the depth, but resembles a flat circle with the eggs lying upon it. If such a photograph is compared with my plate of the thrush's nest the difference will be apparent. It is far better to show a few of the eggs, with just the upper parts of the others in view than to attempt to get all the eggs with their complete outlines visible. This is shown, perhaps, more clearly in my print of the lesser redpoll's nest. Of course, when you find a clutch of eggs such as those of the kestrel pictured on the plate facing p. 186, it is possible and more advantageous to include all in your picture.

Nests in trees will present many difficulties, but if the photographer takes with him plenty of string it should be possible to lash the legs of the tripod to branches in such a position that a view of the nest can be obtained. One of my photographs shows three ardent students of nature photography photographing a heron's nest at the top of a tall tree, and the small photograph inset gives the result obtained. It is often advisable to have an assistant, but not absolutely necessary; I have photo-

graphed nests of the kite and buzzard in tall forest trees with no one to help me.

Nests in trees should be taken on fairly calm days, for even when no wind is blowing a long exposure is not possible owing to the slight movement of the branches which is always more or less present. But with our modern plates, which are so speedy, this need not be much hindrance to obtaining good results. A shutter that can be released with a bulb is the best to use, for then there is no likelihood of disturbing the camera by moving it during exposure. I have found that when the camera is lashed to one part of the tree, and the nest is in another, it is quite possible to give a number of short exposures instead of one long one when there is a wind. You just wait for the still moments and expose, say half a second, then wait for another spell of calm. If this plan is practised, movement will seldom show in the finished print.

When focusing a nest, the swing back of the camera should be brought back as far as possible at the top, then the front of the nest should be focused as sharply as possible with full aperture, and the lens stopped down as much as the conditions will allow ; if there is no wind to disturb the surroundings a stop small enough to get the whole subject sharply focused may be used. The exposure will, of course, vary greatly according to the conditions, but modern plates have a good latitude, and a few seconds over or under the exact exposure will make practically no difference. A few trial exposures will give the photographer sufficient experience to obtain good results under ordinary conditions.

Panchromatic plates should be used, with a K1 or K2 filter, these are now so rapid that the latter filter will only





Top Photographing a nest in a hedgerow

Bottom Photographing a nest of the Black headed Gull

The photographs show a useful type of camera to use for nest photography

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increase the exposure about three times over that which would be given with a non-colour plate. It is not necessary to develop these in complete darkness, or with the almost invisible light given with the special safe-lights supplied for these plates, for by using a desensitiser before development, they may be finished in a light bright enough to allow the photographer to see how the plate is progressing.

The photographer of nests in their natural sites will have to use a lot of ingenuity to get his camera in the desired position; this all adds to the interest of the work. One little dodge to raise the camera when a nest is fifteen or twenty feet from the ground is shown in one of my photographs. This shows myself in the act of focusing a nest of the marsh tit, and it was taken many years ago when nature photography was in its infancy. Two farm labourers who saw me and my camera in what to them was a perfectly ridiculous position, thought the photographer on the ladder was quite mad!

Care should always be taken not to make the bird desert her eggs; I never like to photograph a nest where the tracks left behind would show others where the nest is concealed; the birds do their best to hide their small homes from the prying eyes of their numerous enemies, and we should do all we can to assist them. In districts around small towns and villages, I find the greatest enemies of our common birds are boys who take the eggs for no real reason, but simply because they are eggs. If these boys are taken into the photographer's confidence, and asked not to disturb the nests so that photographs can be obtained of them, many nests of useful insect-eating birds will be saved.

## CHAPTER XVIII

# Preparing the Exhibition Print

IT should be the ambition of every nature photographer who goes in for this work in a serious manner to see his or her prints hung at the exhibition of the Royal Photographic Society held in London each autumn This is to photographers what the Royal Academy's Exhibition is to artists Exhibits are now received from all over the world, showing that nature photography has spread into every country For several years past I have had the honour of being one of the judges in the natural history section, and when I compare the exhibits, of say, twenty years ago with those of the present day, I see what great strides have been made in this interesting branch of photography

During the past few years the Exhibition has been held at the headquarters of the Society at 35, Russell Square, and the wall space for all exhibits is therefore limited Such large numbers of prints have been sent in during recent years that drastic cuts have to be made, and only those photographs which are of a high standard can be hung It is therefore necessary for nature workers to produce the best possible prints if they wish their efforts to find a place on the walls, and it is to help them that I include this chapter on preparing the exhibition print

In making the prints select your best negatives, a thin



Eggs of Kestrel laid on a ledge on a cliff



Method of lengthening tripod when photographing a nest on a high post on

*Inset* Nest of Marsh Tit

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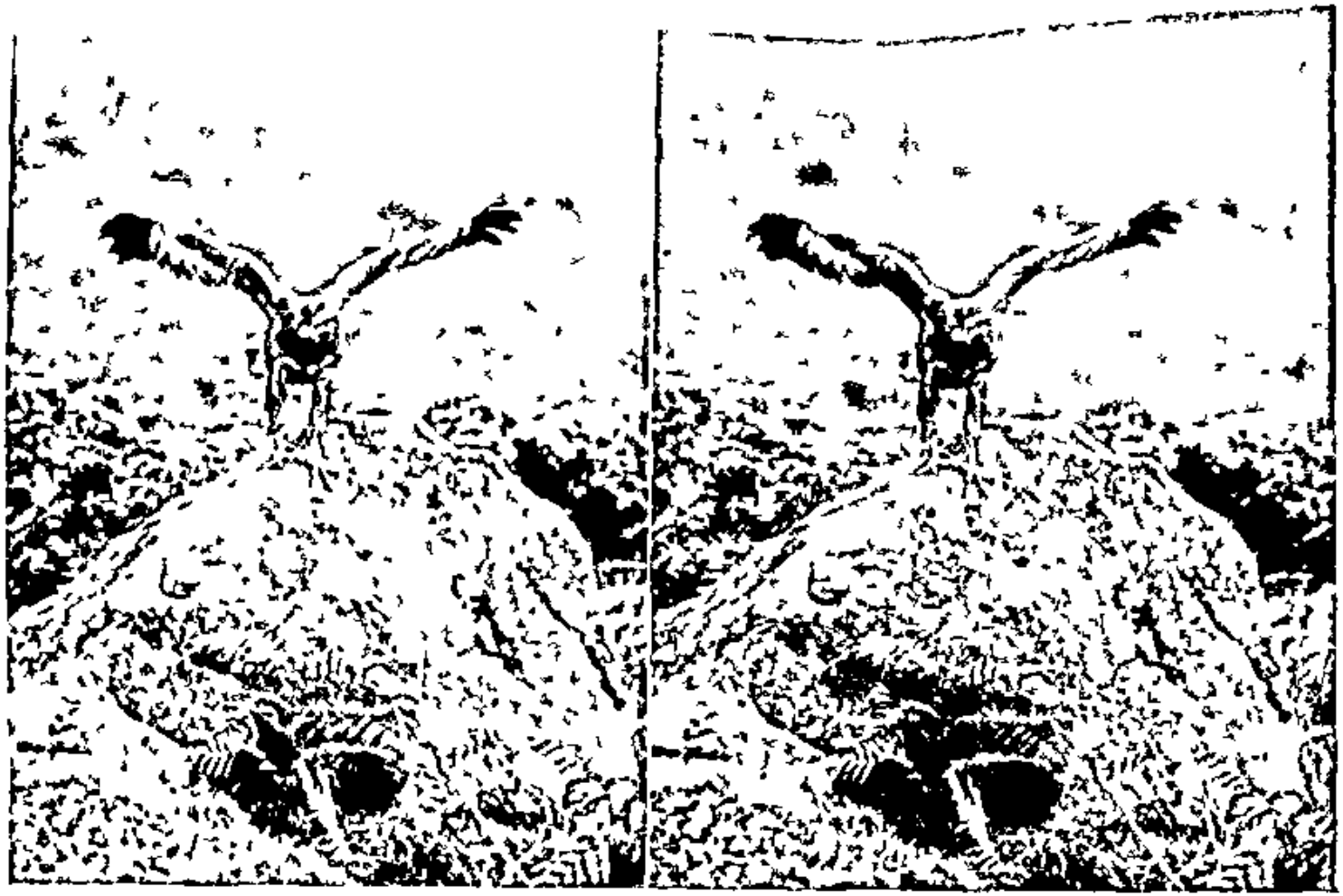
one with plenty of detail will make the best enlargement, for it is advisable to send in a print not smaller than, say, eight by six inches. A brilliant negative, such as photographers of the past called a "pretty" negative does not make a good enlargement, for there is too much contrast in the lights; there should be a softness in the shadows and plenty of good detail in the other parts. Photographs taken in bright sunshine seldom make good exhibition prints, but it occasionally happens that what ought to have been the photographer's best work had to be taken in a brilliant light with great contrasts, for when a nature photographer has to take his subjects during the few days of an annual holiday, it does not give him much choice in regard to weather.

But a hard negative can be made to give a good print if care is taken. One method is to treat the negative with transparent dyes. I use a pale yellow to be obtained in the "Velox" range of transparent water-colour stamps. The negative should be placed in a retouching desk, then with a good light reflected through it one can go carefully over the thin parts with a camel-hair brush. The thinnest parts should be worked over until the dye is a deeper tint, that is, the dye should be varied according to the thinness or otherwise of the negative. It is advisable to place the dye on a dry negative, for then you are able to keep the margin of the line of colour quite sharp; the brush should not contain too much moisture or it may "run," and if any dye travels over the margin, it will cause defects which must be touched out in the print. However, with care, it is possible to keep a perfectly sharp line to the dye. If the photographer should make a serious mistake, the whole can be washed off by holding the negative under a running tap for a short time. It is

quite a good plan to make an enlargement on to bromide paper to keep by your side while applying the dye, you can see the parts which need it, and also judge of the density required.

The choice of paper is important. There is such a wide range of printing papers now available that the photographer should not have much difficulty in selecting a brand suitable for his special work. If the print is to be a small one, then a paper with a fairly fine surface should be chosen, big enlargements of bold subjects can be printed to advantage on a rough paper. I use for nearly all my exhibition prints the Wellington "Normal Cream Chamois," double weight. Full instructions for developing are enclosed in the packets. It would be difficult to find a paper which gives such fine results with normal negatives. Four of the finest quality prints that I ever saw at an exhibition were produced on this paper by my friend Mr. F. Martin-Duncan; these were marine subjects, and among over a hundred prints of all kinds they stood out supreme.

Care should be taken in the mounting. Anything gaudy will not stand a chance of being hung on the walls of any exhibition. At one society where I was judging a set of quite good subjects was sent in by one worker, but they were mounted in a most atrocious manner which reminded one of a gaudy Victorian Christmas card! It was impossible to place them on the walls. The mount, preferably a cream colour, should be larger than the print, but not with an excessive margin. If the print is, say, eight by six inches, then a mount eighteen by sixteen inches is quite the largest that should be used. If the print is the usual black and white bromide, it can be improved by having an under mount with a very thin



Buzzard alighting

The photograph on the left is the rough print, that on the right is "spotted" and the high lights toned down.

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white line on which the bromide print is mounted. This gives a thin white margin all round the print, and this again can be mounted on to grey paper which gives a margin of about a quarter of an inch outside the white line. Multiple mounting can be very effective if it is not carried too far. At some of the exhibitions held a few years back this mounting was carried to excess, and I have seen prints with nine separate margins. A brown-toned print can be made to look very nice with a thin white line round it superimposed on a wider margin of brown. Some bold black and white prints are improved with a black margin, but if the photographer has a selection of mounts a little experimenting will soon settle the matter, for every print really needs different treatment. Some look well mounted on a plain mount with a pencil line all round the photograph, and others are greatly improved with a "plate-sunk" mark on the mount.

The print should be touched up after it is mounted. A fine camel-hair spotting brush is the best for this purpose, and the proper retouching colours, to be obtained from any photographic dealer, should be used. Grey, black, brown and white are four useful colours. Of course, before the enlargement is made, all pin-holes in the negative should be spotted out, but it often happens that on an enlargement small black spots appear from tiny pin-holes which were not seen on the original negative. These should first be spotted with a mixture

should be well soaked with it, so that the parts can be washed over quickly If this is done carefully the whole of the dead white part is toned down just sufficient to make it not too prominent Blades of grass, stones which reflect the light and come out white, glossy leaves with the sun shining upon them can all be treated in this manner, and it is surprising what a difference it makes in the finished print Some altogether too strict photographers have said that this is faking the nature print, but as a matter of fact, it is just the reverse, for the camera does not give a true rendering of the subject when it is taken under difficult conditions, and the toning down of the high lights is only assisting the camera to render the subject as it appears to the eye I have photographed a male blackbird at its nest, and in the finished print the bird appeared to have pure white feathers in its wings, as these appeared in different positions in a series of negatives taken, it was apparent that the bird could not change his plumage on each visit to the nest The apparently white feathers were simply caused by splashes of sunlight shining on his glossy plumage. A simple bit of work with the retouching brush showed the bird exactly as it was in nature, while without this the camera gave a false rendering I have seen hundreds of nature photographs reproduced in books and magazines which gave an entirely false rendering of the subject taken, and all because the photographer had refrained from improving his print by judicious retouching on the negative and finished print At the last exhibition of the Royal Photographic Society, a number of rather good nature subjects were sent in, but the photographers had evidently never realised how easy it is to remove spots on the negatives and prints, for



Curlew settl ng on her eggs
A fin hed exhib tion pr nt sho v ng one method of mount ng

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these were covered with glaring spots which made it impossible to include them in the collection hung on the walls. The photographer should criticise his prints, forgetting for the time that they are his own work, and try to get hold of the chief fault in each. If on the print, which is placed at a distance of about ten feet from the observer, there appears to be something that attracts the eye from the main subject, then there is something wrong with it, and steps should be taken to have this defect toned down.

I should like to suggest that all exhibitors should judge their own prints before sending them in. If you have prepared a dozen, place them side by side in a good light and give one or two marks to each print according to its merits. When you have gone through them, discard all those with one mark, and go through the remainder, giving the best of these four marks and the others three. Again throw out all the threes, and send in only those with four marks. By doing this a lot of valuable time will be saved when the judging takes place, and the exhibitor will know that he is sending in his best work.

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